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# PROVIDING FOR THE CASUALTIES OF WAR

THE AMERICAN EXPERIENCE  
THROUGH WORLD WAR II



BERNARD ROSTKER





NATIONAL DEFENSE RESEARCH INSTITUTE

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THROUGH WORLD WAR II

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Prepared for the Office of the Secretary of Defense

Approved for public release; distribution unlimited

The research described in this report was prepared for the Office of the Secretary of Defense (OSD). The research was conducted within the RAND National Defense Research Institute, a federally funded research and development center sponsored by OSD, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community under Contract W74V8H-06-C-0002.

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## Foreword

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[In war], the latest refinements of science are linked with the cruelties of the Stone Age.

—*Sir Winston Churchill*  
*Speech, London*  
*March 26, 1942*

The above quote applies especially to military medicine: Weaponry has become increasingly lethal, but medical advances are making horrific wounds survivable. It was my job as the Surgeon General of the Army to build a robust medical presence on the battlefield and a sophisticated system of recovery care and rehabilitation for our wounded soldiers. In *Providing for the Casualties of War*, Dr. Bernard Rostker sets my task against the backdrop of history.

Histories of military medicine usually concentrate on battlefield care and transportation, occasionally on recovery in hospital systems, and rarely on rehabilitation. Efforts to consider all aspects of care, from the time of wounding through ongoing rehabilitation and all the systems supporting this spectrum, are rare indeed, and I am not aware that it has ever been done with the detail Dr. Rostker has provided.

Beginning with a history of casualty care from ancient to modern times, this volume describes the progression from early primitive care, to more “modern” practices (e.g., bleeding, cauterization) that can best be described as well intended, and to the rapid improvements of the 20th century. The recognition that there is need for additional care, including rehabilitation, is recounted in this volume. Rostker clearly shows the progression of care from the battlefield to follow-up care through the ages, especially how France and Great Britain laid the groundwork for the establishment and evolution of the American systems of care we enjoy today. The interplay of military care with that of care for the disabled and veterans is chronicled, along with the establishment of benefit programs. Of particular note is the growing recognition of mental health problems and the difficulty of recognizing, diagnosing, and treating these conditions.

This is a unique, comprehensive, and well-written history of the scope of military medicine, from the time of wounding to follow-up care as a veteran. It covers ancient



times through World War II and its immediate aftermath. It is for both the serious student and the interested casual reader and should be a useful reference for policymakers, care providers, and history buffs alike.

LTG Dr. Ronald R. Blanck, U.S. Army (Ret)  
Former Surgeon General of the Army

## Preface

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The current and future care of the casualties of war<sup>1</sup>—those who have been wounded or injured or who are mentally or physically ill—is of primary importance to the military and civilian leadership of the military services, the Department of Defense, and the Department of Veterans Affairs. The 2010 Quadrennial Defense Review Report highlighted the care of wounded warriors as a major, high-priority initiative:

Apart from working to prevail in ongoing conflicts, caring for our wounded warriors is our highest priority, and we will strive to provide them the top-quality physical and psychological care that befits their service and sacrifice. Providing world-class care and management, benefit delivery, and standardization of services among the Military Departments and federal agencies continues to be the focus of the Department's most senior leadership. Our wounded, ill, or injured service members deserve every opportunity to return to active duty following their recovery, or to make a seamless transition to veteran status if they cannot be returned to active duty. (U.S. Department of Defense, 2010, p. 49)

As with every other aspect of the military, the relevant policies have evolved over time, and having a basic grasp of their roots and evolution should improve understanding of today's policies. This volume begins with the ancient and European roots of care for fallen soldiers. It continues through America's own wars, describing how the U.S. government has arrived at its current set of policies for caring for its injured and ill soldiers and veterans. For each historical example, the discussion addresses the nature of the conflict, combat casualties, and the way both soldiers and veterans were treated. It addresses such questions as who were able to remain in the service and who had to separate, either through discharge or retirement, and what roles their families, their communities, or (more recently) the Department of Veterans Affairs played in their care.

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<sup>1</sup> As used throughout the volume, the term *care* includes assistance rendered on the battlefield, in military hospitals before separation from the military, and in veterans' facilities after separation from the military. While some include support for housing, education, and postservice jobs under the banner of care, here it deals primarily with medical care and generally only what the government provides in the form of pensions and medical services.

The focus is on the U.S. Army because, throughout U.S. history, it has suffered the most war casualties of all the services. While all the services share some common history, they are distinct organizations with their own stories to tell. Sorting out the areas of overlap and paying each service the same degree of attention as is given to the Army here was beyond the scope of this effort. A planned second volume will pick up from June 25, 1950, the start of the Korean War, and continue forward to today's conflicts.

This research was sponsored by the Deputy Under Secretary of Defense for Program Integration and the Office of the Under Secretary of Defense for Personnel and Readiness and was conducted within the Forces and Resources Policy Center of the RAND National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community.

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## Acknowledgments

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Originally, this study was one of four tasks in a project entitled “Implications of a Paradigm Shift: The Management of War Wounded Under the All-Volunteer Force.” The purpose of the study was to examine the implications of what we believed to be an ongoing paradigm shift in the management of war wounded under the all-volunteer force. Each of the four tasks was to assess the paradigm shift in one specific area: changes in policy; medical treatment; support for the wounded and their families; and the organizational and institutional implications of reintegration of severely wounded soldiers, primarily amputees, back into the Army. I was responsible for the first task, with Terri Tanielian, Laura Miller, and Ralph Masi each being responsible for one of the other tasks.

It soon became clear, based upon an initial review by Donald Temple, that, while care for the wounded was very important, the premise of the study—that there was a paradigm shift uniquely associated with the all-volunteer force—was erroneous. A further review of the literature by Melanie Sisson showed that much of what appears new and innovative was actually rediscovery of what had gone before. As a result, with encouragement and support of Jeanne Fites, the former Deputy Under Secretary of Defense for Program Integration, and Norma St. Claire, the Director of Information Management, this task was expanded into a separate project to provide a more-detailed look at the evolution of care. Mrs. St. Claire was particularly concerned that decisions were being made with little knowledge of what had gone before and that a fuller account of history would provide information that would lead to “better” decisions by building on the successes and failures of the past.

The challenge in writing a book like this is not knowing what you don’t know. I was fortunate that a number of people were willing to read the drafts and suggest changes, corrections, and new sources of materials. I am indebted to them for their generous assistance: Dale Smith of the Uniformed Services University for the Health Sciences; Robert Goldich, Former Senior Military Manpower Analyst at the Congressional Research Service; Michael Katz, the Walter H. Annenberg Professor of History at University of Pennsylvania; James Banks, Founder and Director, Crile Archives Center for History Education at Cuyahoga Community College; David Chu, former Under Secretary of Defense (Personnel and Readiness); LTG Ronald R. Blanck, USA

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## Abbreviations

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AAF	Army Air Forces
AEF	American Expeditionary Forces
AGF	Army Ground Forces
AR	army regulation
ASF	Army Service Forces
DDT	the well-known banned insecticide: $C_{14}H_9Cl_5$
ETO	European Theater of Operations
FY	fiscal year
GAR	Grand Army of the Republic
GHQ	general headquarters
GI	government issue
KIA	killed in action
NRC	National Research Council
PTSD	post-traumatic stress disorder
USPHS	U.S. Public Health Service
V-J Day	Victory Over Japan Day
VA	Veterans Administration
WAC	Women's Army Corps; its members were referred to as "WACs."
ZI	Zone of the Interior





## Introduction: Looking to the Past for Lessons . . . to Apply in the Future

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[T]o care for him who shall have borne the battle and  
for his widow and his orphan.

—*President Abraham Lincoln*  
*Second Inaugural Address*  
*March 4, 1865*

How the nation cares for its war casualties today, both during their service and as veterans, is the result of progress along a well-established path that extends back before the dawn of history and continues with our most recent conflicts in Iraq and Afghanistan. The clinical characteristics and health needs of our current casualties, however, are very different from those of the past, with death rates and amputations at an all-time low. In past conflicts, the most serious battle injuries were typically wounds resulting from gun and artillery fire. Today's improvised explosive devices planted along roadsides are the scourge of the battlefield. They often result in burns, traumatic brain injuries, or limb loss (or some combination of the three).<sup>1</sup> Changes in battlefield medical technologies have also profoundly changed the treatment of wounded and injured soldiers. Rapid evacuation of the seriously wounded from the battlefield to military fixed-facility hospitals enables early entry into definitive care and follow-on rehabilitative services.

Not only have the nature of war and the clinical treatment of injured or ill soldiers changed, today's soldiers are also different from and being used differently than those who fought in earlier wars. This is the first prolonged conflict the United States has ever fought without the use of conscripts and the first in which it has routinely rotated troops in and out of the combat theater, meaning that some soldiers are on their fourth or even fifth deployment to a combat zone. In contrast, the nation relied heavily on the

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<sup>1</sup> The improvised explosive devices used in Iraq were often made from artillery shells. They were used like land mines and produced similar casualties. During World War II, the increased use of land mines by the retreating Germans at the end of the war resulted in a significant increase of wounds to the lower extremities. In 1943, 15 percent of all amputations were attributed to land mines; by the last year of the war (1944–1945), the rate more than doubled to 34 percent (Hampton, 1957, p. 261).

draft in World War II; soldiers were deployed overseas for years, serving for the duration of the conflict. The Vietnam conflict came into American living rooms through television, almost as it was happening. As vivid as these images were, they could seem surreal to the average viewer, almost like watching a war movie. For the loved ones at home, such broad reporting of events was, at the same time, not enough and too much. Contact was still largely impersonal and distant, but the realities of war were clearer to family members. Today, advances in worldwide communications allow soldiers and their families frequent personal contact. Together with the frequent rotations in and out of theater, these contacts have helped families become more engaged in events than ever before. Military leaders have recognized that this adds a new dimension to the meaning and calculus of war casualties and raises serious questions about how incidents of suicide, post-traumatic stress disorder (PTSD), divorce, and postdeployment domestic violence affect military families.

The linchpin of these new social realities of war was the all-volunteer force. The nation moved from a mixed force of conscripts and volunteers to the all-volunteer force in 1973. An underappreciated consequence of that change at the time was the sharp rise in retention, resulting in a much larger professional career force (Rostker, 2007b, p. 529). As a result, a large number of soldiers and their families are experiencing a new kind of war with consequences that are still unclear. Some have argued that the all-volunteer force has heightened the sense of commitment between the Army and its soldiers and that the creation of often-competing “wounded-warrior” programs is one manifestation of that heightened commitment. This volume will examine this argument and similar assertions about the uniqueness of today’s volunteer military in its historical context.

In one way, however, the current situation is not unique. Seven years after U.S. troops joined battle in Afghanistan, Congress passed the Defense Authorization Act of 2008, which reflected lawmakers’ concerns

about the quality and availability of medical, mental health and dental care services for service members from active duty in Iraq and Afghanistan, and the difficulties that some of these individuals have experienced in their transition from military service to veteran status. (Lister, Panangala, and Scott, 2008, p. 2)

Such concerns are repeated throughout history, as a reading of this volume will confirm.

The simple phrase “providing for the casualties of war” contains a number of meanings. A *casualty* is a military person lost to service from death, injury, illness, capture, etc. In the context of this discussion, the term *casualties* refers to those who are physically wounded, injured, chronically ill, or mentally incapacitated. The term *care* includes assistance rendered on the battlefield, in military hospitals before separation from the military, and in veterans’ facilities after separation from the military. While some include support for housing, education, and postservice jobs under the banner of care, here we deal primarily with medical care and generally only what the

government provides in the form of pensions and medical services, including clinical and rehabilitation services. Even with this limiting definition, however, the care a casualty receives has changed over time as a reflection of prevailing societal norms (see Liachowitz, 1988). Today, the Americans with Disabilities Act reflects the government policy “that physical and mental disabilities in no way [should] diminish a person’s right to fully participate in all aspects of society” (Americans with Disabilities Act of 1990, as amended, 2012). Accordingly, the casualties of today’s wars receive an expansive set of rehabilitative services that were not provided in the past.

In this volume, the contents are arranged chronologically, with separate chapters that provide historical background for each major military conflict this country has fought. As much as possible, each chapter describes the military nature of the conflict; how the military mobilized for the conflict; the organization of the military medical establishment; the state of medicine at the time; the major injuries and illnesses of the period; and how soldiers were cared for on the battlefield, in the military before separation, and as veterans after the war. The chapters are arranged in this fashion, rather than along topic or policy issue lines, to capture the interdependencies. For example, the decision in 1944 to stop sending invalided soldiers to the Veterans Administration (VA) and to keep them on active duty can only be understood in the context of the state of the home-front institutions of the time, the mobilization of the civilian economy, and the state of military medical capabilities at the time.

Today’s program for war casualties is relatively new in human history, dating back less than a century. The changes brought about during World War I were remarkable both because they were built so firmly on the steady evolution of medical care soldiers received through time and, at the same time, broke with what had gone before in significant ways. The longer view of history reveals cycles that have been repeated time after time. During the early days of all but the most recent U.S. conflicts—the first Gulf War in 1991 and the current conflicts in Iraq and Afghanistan—military medical facilities and personnel were initially not adequate to care properly for all the sick and wounded. Expanding from a base designed to care for a small peacetime Army, the process of inducting civilian medical specialists and providing them with the skills to care for military casualties generally took longer than anticipated. Eventually, lessons were learned, but the end of hostilities and the demobilization of medical personnel meant reductions in the Army’s medical department, with little regard to the needs of veterans. All too often, the demobilization deprived the government of the trained medical personnel needed to properly care for the veterans.

This volume pays special attention to two conditions that epitomize the changing nature of casualties throughout history. Amputees have been a focus of attention for centuries, but only recently have psychological injuries been recognized as a significant malady of war. Throughout history, amputees have been the most visible of all war wounded. Those suffering from other physical injuries and from disease eventually recover or die. The amputee, however, lives on for years, and his injuries are highly

visible. The fascination with the amputee continues to this day; until very recently, wounded-warrior programs focused primarily on this consequence of war.

As medicine has advanced and physicians have learned to control disease and reduce the mortality from wounds, advances in psychiatry have raised an acute awareness that combat, and even the expectation of combat, can cause psychological casualties, leaving debilitating mental and physical manifestations. While it is certain that such casualties have always existed—ancient texts have vividly described the psychological impairments—specific diagnoses and treatments are relatively recent. Given their importance today, this volume also highlights the development of psychiatric services.

Throughout history, the care a casualty receives seems to be related to the nature of conflict and wounds, the organization of medical services on and off the battlefield, the state of medical knowledge, and the role of the state in caring for veterans. The discussion begins with an overview of the early history of care for the wounded in Europe, starting with the classical period in Greece, moving through the Roman Empire and the Middle Ages, to the rise of the nation-states in France and Great Britain. The review ends with the great transformation of care for the war wounded that occurred during World War I in Europe. Until World War I, support for veterans meant programs that provided pensions for the disabled and, when necessary an “asylum” where the aged and disabled could live out their lives. After World War I, support for veterans meant rehabilitation programs intended to help the disabled become as nearly independent and productive members of society as possible.

Subsequent chapters trace the U.S. experience, starting with the colonial period, moving through the Revolutionary War and the wars of the early 19th century (Chapter Three). Chapter Four covers the Civil War. Chapter Five covers the period from the end of the Civil War up to World War I, and thus includes the Spanish-American War. Chapter Six covers World War I, and Chapter Seven examines World War II. The volume ends with the overhaul of the VA after World War II. A planned second volume will begin with the Korean War and continue to the present.

## Evolution of the European System of Providing for Casualties: Greece, Rome, the Middle Ages, and the Renaissance

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War has been part of the human experience since before recorded history.<sup>1</sup> Freud suggested that this may be an inherent trait, that “conflicts of interest between man and man are resolved, in principle, by the recourse to violence” (Einstein and Freud, 1931–1932). Although people have not been able to overcome their essential proclivity to make war on one another over the millennia, there has been some progress in how the casualties of war are treated. Early efforts to care for those maimed in combat were established for four reasons: First, the wounded represented a valuable asset that, with proper care, could be returned to duty and could continue to serve. Second, without proper care of the wounded, the morale of the troops would suffer. Third, for those unable to return to duty, this was a way to deal with the potential problem of disabled veterans who were unable to work resorting to theft and other unruly behavior. Fourth, without guaranteeing some degree of care for the injured, the state would not be able to recruit additional soldiers. Despite the rather altruistic rationale said to underpin today’s policies—that the state has an absolute obligation to care for those who served it on the battlefield<sup>2</sup>—the four historical concerns of conserving the force, ensuring good morale, placating veterans, and bolstering future recruiting still underpin today’s policies.

### The Ancient World

The ancient world, starting at the dawn of recorded history, incorporates the Bronze Age (4000 to 1300 B.C.) and the Iron Age (1300 B.C.) and ends with the fall of the Roman Empire in the west in 352 A.D. While historians have pieced together accounts

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<sup>1</sup> Keeley, 1996, p. 183, counters the notion of the “noble savage” using archaeology: “The physical circumstantial evidence already available repeatedly attests that what transpired before the evolution of civilized states was often unpleasantly bellicose.”

<sup>2</sup> For example, see Buddin and Kapur, 2005.

of the medical care of wounded soldiers in ancient Sumer (4000 to 2000 B.C.), Egypt (3500 to 350 B.C.), and Assyria (911 to 612 B.C.),<sup>3</sup> it fell to the Greeks of the classical period after 550 B.C. and to the Romans to develop a coherent body of knowledge—which was then lost to the West for more than 1,500 years, until it started to reappear in the late Renaissance. A number of generalizations can, however, be made about both the progress of medicine and its application in support of armies in the ancient world.

Early care for wounded soldiers was in the hands of priests, who tried to explain the mysteries of sickness and death as matters in the hands of the gods. A strong medical tradition was not possible until medicine was separated from religion, which occurred in Mesopotamia (see Adamson, 1982, p. 43) and under the Greeks and which the Romans fostered. Initially, care for the wounded was a private affair, rather than a state responsibility. It was only when armies grew to support the imperial ambitions of their commanders that the military developed anything that could be called a distinct system of military medicine.

Empirical medicine and the freedom to explore unfettered by religious restrictions were important foundation stones on which military medicine was built. Another was being able to recruit, train, and retain medical personnel knowledgeable in a variety of specialties distinct from those of their civilian colleagues. After the fall of Rome, these foundations were not rebuilt until the rise of the nation-state in the 17th century, so that military medicine could again achieve and surpass the level of sophistication and quality of care imperial Rome provided its soldiers.

### Greece

In the *Laws* (Plato, 360 B.C.), Plato used a dialogue between three strangers to explore the nature of society. In a long discourse, one of the speakers says:

The aim of our institutions is easily intelligible to anyone. . . . All these regulations have been made with a view to war. . . . All [men] are always at war with one another. . . . For what men in general term peace would be said by him to be only a name; in reality every city is in a natural state of war with every other, not indeed proclaimed by heralds, but everlasting. . . . No possessions or institutions are of any value to him who is defeated in battle; for all the good things of the conquered pass into the hands of the conquerors.

Given this proclivity for war among the Greek cities,<sup>4</sup> their tactics and technology were rather simple, especially compared with today's wars. This was an era before gunpowder or modern explosives. It was an era of muscle power, when killing and

<sup>3</sup> For example, see Garrison, 1917, p. 44–65; Garrison, 1922, pp. 22–34; and Adamson, 1982.

<sup>4</sup> Hall, 2007, p. 88, attributes this view to “an earlier generation of scholars” but acknowledges that “war and the warrior loom large in the visual arts and literature of archaic and classical Greece.” Nevertheless, Krentz, 2007, p. 173, notes that, by the middle of the 5th century B.C., “unwritten rules governed the end of battles, . . .

defensive technologies were well matched.<sup>5</sup> The armor of the day, however, was often not up to the task, as Salazar notes that, “even when wearing a helmet, a soldier’s head was not fully protected; . . . swords cut through helmets, or crack[ed] them by the force of the blow,” and stones hurled by slingers could cause cranial fractures (Salazar, 2000, pp. 13–14). A survey of ancient texts suggests the most common wound was to the leg, with a 75 percent survival rate (see Krentz, 2007, p. 184).

The primary battle formation of the era was the *phalanx*: “The phalanx concealed the limited combat skills of its members within its mass, and was thus convenient formation for militias on short-term service” (Wheeler and Strauss, 2007, p. 205).<sup>6</sup> When the battle was joined, the opposing forces pushed against each other, with the front lines engaged and the rear pressing forward. Wheeler notes that, eventually, “one side tore a gap into the opponent’s line or one party was bested in the test of wills” (Wheeler and Strauss, 2007, p. 211). Only if the phalanx broke would casualties of one side greatly surpass the other, and then they were often limited by the inability of the heavily weighted infantry soldiers to press the pursuit. Wheeler suggests casualty rates as follows:

The victors lost about 5 percent and the losers about 14 percent with the discrepancy coming in the second phase of battle, the rout. Further estimates assert that about 80 percent of the seriously wounded died on the day of battle, 30–35 percent died after returning home, and probably half of the survivors incurred permanent disabilities. (Wheeler and Strauss, 2007, pp. 12–13)

This is not to say, however, that there were not striking examples of mass casualties. Plato was correct when he said “all the good things of the conquered pass into the hands of the conquerors” (Plato, 360 B.C.), especially the lives of the conquered. History records Alexander’s massacre of 6,000 Thebans. Mercenaries were often put to death “out of vengeance or because leaving them at liberty would be dangerous [and] the massacre of enemy prisoners was common during civil wars, and routine in the case

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whereby the loser admitted defeat by formally requesting a truce to bury their dead, [and] . . . victors normally granted the truce.”

<sup>5</sup> The majority of the wounds would have been made by “swords, spears, javelins and arrows, but also by other missiles used by slingers, such as stones or lead bullets” (Salazar, 2000, p. 9). Military historian Trevor Dupuy (1980) calls this the *age of muscle*, which he dates to the end of the 16th century. In his taxonomy, it was replaced by the *age of gunpower*, when the principal infantry weapons were the musket, then flintlocks, and finally rifles. This was in turn replaced by the *age of technology*, starting in the mid-19th century.

<sup>6</sup> The *phalanx* was a column formation of heavy infantry carrying pikes (long spears) and swords. The pikes were 6 to 12 feet long, much longer than spears of the past. Men in the phalanx carried a round shield called a *hoplon*, from which the infantry took their name, *hoplites*. Hoplites wore metal armor on their chests, forearms, and shins at least, plus a metal helmet that covered the head down to the neck. A typical phalanx unit was ten men across the front rank and ten men deep. The phalanx was the result of an “evolution from fluid engagements of individuals and small bands to masses in line to a closely ordered mass in depth operating as a unit” (Wheeler and Strauss, 2007, p. 199).



of rebellions. In the case of non-Greeks, even less restraint was shown” (Wheeler and Strauss, 2007, p. 396).<sup>7</sup>

Setting aside the difficult question of the whether or not the Trojan Wars, as recounted by Homer, ever took place and accepting Finley’s warning that “Trojan archaeology has not been able to substantiate the Homeric tales on . . . [its] most essential points” (Finley, 1968, p. 31), the Homeric tales from antiquity provide a vivid account of both physical and psychological combat wounds.<sup>8</sup> The descriptions contained in the *Iliad* and the *Odyssey* were as much accepted by the people of the ancient world that heard them as were the tales themselves. Of the 147 wounds mentioned in the *Iliad*, 114 (77.6 percent) were fatal, with the largest numbers caused by spears (106), then swords (17), arrows (12), and slings (12).<sup>9</sup> Only arrow wounds had a mortality rate of less than 50 percent, which may be one reason that the Ancient Greek term for the person who cares for the wounded, *iatros*, is said to be rooted in an old Ionian word meaning “extractor of arrows.”<sup>10</sup> This is well illustrated in the description of the care given Eurypylus in Book 11 of the *Iliad*:

Eurypylus . . . wounded, the arrow planted deep in his thigh, and limping out of battle. . . . Struggling with his wound, Eurypylus [tells Patroclus, that the] Trojans’ power keeps on rising, rising. Save me at least [he implores]. Take me back to my black ship. . . . An aide saw them and put some oxhides down. Patroclus stretched him out, knelt with a knife and cut the sharp, stabbing arrow out of Eurypylus’ thigh and washed the wound clean of the dark running blood with clear warm water. Pounding it in his palms, he crushed a bitter root and covered over the gash to kill his comrade’s pain, . . . and the wound dried and the flowing blood stopped. (Homer, 1990, pp. 323–324)

<sup>7</sup> According to Wheeler and Strauss, 2007, p. 396:

After the capture of Tyre, Alexander crucified all men of military age, and sold the women and children into slavery. At Sangala in his Indian campaign, he killed wounded captives and massacred a large portion of the population. Such slaughter served the purpose of terrorizing the enemy, although this could be counter-productive.

<sup>8</sup> The descriptions of physical wounds are so detailed that some have claimed that Homer must have been a practitioner of the healing arts (Nutton, 2004, p. 37). Appreciation for the psychological wounds was heightened by the landmark works of Jonathan Shay, who uses the *Iliad* and the *Odyssey* as lenses to bring the plight of Vietnam veterans into focus. See Shay, 1994, and Shay, 2002a.

<sup>9</sup> The 19th century German historian F. H. Frolich provided these estimates, as reported in Garrison, 1922, p. 36. Garrison notes that Frolich “was ridiculed by some of his contemporaries for making an elaborate statistical tabulation of the war-wounds in the *Iliad*; but, . . . his percentages are at least as reliable as what the mathematical laws of probability would obtain.” Also see the use of these numbers in Marketos and Androustos, 2008.

<sup>10</sup> The etymology of medical terms provides insights into the early practice of medicine. The distinction between physicians and surgeons goes back to how the healing arts were practiced in early Greece. The term *physician* derives from the Greek *physikos*, meaning “natural, physical.” The separate medical term *surgeon* derives from the Greek *cheirourgios*, meaning “hand work.”

Homer's works suggest that care of the wounded was not a central state function and, as the above passages from the *Iliad* suggest, was in the hands of individual warriors and their servants.<sup>11</sup> Those maimed in battle, if they survived, had to rely on their friends and families for their care. Similarly, without formal rehabilitation programs, the psychologically wounded could only be healed in the "poorly understood 'spontaneous,' or 'natural' processes of recovery" at home, on the veteran's native soil and in his community (Shay, 2002a, p. 5). Marlowe asserts that the Greeks were unable to deal with abnormal behavior because of "a severe lack of knowledge" (Marlowe, 2001, pp. 9–10). He argues that the

history of the psychological consequences of warfare for most of the next two thousand years in the West appears to be one of decoupling perceived combat effects from combat itself. If men broke in combat or suffered psychologically afterwards, the fault lay in themselves and was not a consequence of war. This decoupling governed most thought about the consequences of combat through World War I and for the most part continues today. (Marlowe, 2001, p. 12)

The army of Alexander (336–323 B.C.) stands in sharp contrast to the other Greek armies of the period in that it was not organized for defense and short campaigns but for long deployments of thousands of miles and many years and "attempted to organize medical services for officers and troops when on active service" (Adamson, 1982, p. 45).<sup>12</sup> Records that have come down to modern times show that Alexander employed military surgeons both for his own care and for that of his troops, since replacing losses so far from home was very difficult and costly. While Alexander generally followed his father's policy and did not allow the use of wagons because they "restricted the army's speed and mobility, . . . a few carts carrying essential items such as siege machinery and ambulances always remained with the army" (Engels, 1978, p. 15). Accordingly, it has been argued that Alexander deserves the credit for organizing the first military medical corps in any Western army. If so, it was a very small corps by today's standards or even the standards of the Imperial Roman army, only 300 years later. By one account, Alexander had only seven physicians to care for over 40,000 soldiers. Wounded soldiers who were unfit for further service were usually discharged in place and helped Hellenize the conquered territories (see Adamson, 1973, p. 225).

The art of physicians in classical Greece was handed down from one practitioner to another, and Garrison notes that, "on finishing this course . . . [an apprentice] simply took the oath of the particular medical clan or sect to which he belonged" (Garrison, 1917, p. 80), as was the case with Hippocrates, who received his initial medi-

<sup>11</sup> Adamson, 1982, p. 44, argues that, during this period, while "medical services might have been adequate for the high command, they were certainly inadequate for the majority of the fighting troops."

<sup>12</sup> Roth, 2007, p. 395, notes that there was "no evidence of a regular medical service among Hellenistic monarchies."

cal training from his father (Garrison, 1917, p. 81). Being a physician in Greece was to take up an itinerant craft supported not only by the various royal courts of the time but also by the state for the good of the people and the military and ultimately by the ordinary man to the extent that he could pay (see Nutton, 2004, p. 87). According to Herodotus, some physicians were paid by the state to “reside in the community and be on hand to treat citizens,” but a vast majority of the less-prominent physicians, along with “midwives, bone-setters, herbalists, and the like, had to rely on what they could gain by their own efforts” (Nutton, 2004, p. 87).

Military physicians were more accomplished and experienced in caring for the wounds of battle than their civilian colleagues were, but their purpose was not humanitarian. Their job, as it is today, was “to make the soldier fit for the next battle as soon as possible and also to make him fight more bravely out of gratitude for the good treatment bestowed on him” (Salazar, 2000, p. 73). When available, military physicians could treat wounds and extract arrows, applying what were then appropriate drugs and ointments, but even then the chance of survival was poor because of a general inability to control bleeding and shock and prevent infection. While Greek military physicians were the first to use tourniquets to temporarily stop bleeding, they did not know how to permanently stop the bleeding once a tourniquet was removed. A successful technique to tie off arteries was finally developed by the Romans.

The study of medicine in Greece was unique in the ancient world. It was different from what had gone before and different from what was being practiced by its neighbors. The Greeks went further than any to separate medicine from religion and found a coherent doctrine on philosophy and logic, as illustrated by the *Hippocratic Corpus*, written in the 5th century B.C. (see Nutton, 2004, pp. 61–62).<sup>13</sup> Unfortunately, without knowledge of anatomy and basic science, their reasoning often led down a disastrous path, as was the case of their misunderstanding of the healing process and the use of bleeding and purging. The Greeks had the lethally wrong notion of the value of infection and of “laudable pus” as an indication of natural healing.<sup>14</sup> The standard practice of closing wounds as soon as possible almost always lead to infections and gangrene. Their preference was for chemical ointments, such as lead oxide, which was ineffective in controlling infections. On the other hand, Greek wound washes, such as wine and vinegar, were very effective. A compound in Greek wine, polyphenols, is 33 times more powerful a bactericide than the phenols Joseph Lister used in 1865.<sup>15</sup>

<sup>13</sup> The *Hippocratic Corpus* contains textbooks, lectures, research, notes, and philosophical essays, on various subjects in medicine, and scores of individual case studies. It contains the Hippocratic Oath, which graduates of medical schools take to this day.

<sup>14</sup> *Laudable pus* was a term once used to describe “a quality of pus that was thick and creamy and not indicating an infection that would spread, leading to blood poisoning and death” (Steadman, 1995, p. 939). See also Majno, 1975, pp. 183–185.

<sup>15</sup> See the extensive discussion of wine and vinegar as antiseptics in Majno, 1975, pp. 186–188. The Romans improved on what the Greeks had discovered, as their stronger red wine had higher concentrations of polyphenols.

Finally, the legacy of Greek medical thinking, wrong as it was and repackaged by the Romans through the writings of Galen, “continued to be studied, applied, challenged and defended in Western Europe well into the nineteenth century” (Nutton, 2004, p. 157).

The city-states of classical Greece are also noteworthy because they were the first governments to take *some* responsibility for the wounded soldiers, widows, and orphans—an obligation that would eloquently be repeated by President Abraham Lincoln in his Second Inaugural Address. During his first term of service to Athens (594–593 B.C.), Solon, “the lawgiver,” directed that “persons maimed in war be maintained at the public charge” (as quoted in Snyder, Gawdiak, and Worden, 1991, p. 2). A generation later, Pericles, in his famous funeral eulogy given in 431 B.C., states that “those who are here interred have received part of their honors already, and for the rest, their children will be brought up till manhood at the public expense: the state thus . . . reward[s] both those who have fallen and their survivors.” Plutarch also mentions state support for Athenian warriors maimed in battle.<sup>16</sup>

## Rome

According to legend, twin brothers descended from a Trojan prince and suckled by a she-wolf founded Rome in 753 B.C. The place grew from a village at a ford on the Tiber River to a monarchy that was replaced in 509 B.C. by a republican form of government. The government consisted of the senate; various representative assemblies; and the two magistrates or consuls, elected annually, who together exercised executive and military authority. The power of the new republic grew, and by the 2nd century B.C., Rome was the dominant power in the Mediterranean.

From the beginning of Rome, military service was the essential obligation of all citizens. As Rome grew, however, more of its residents were not citizens. According to tradition, the Roman king, Servius Tullius (580–530 B.C.), addressed this problem with a series of reforms to extend the obligation to serve to all permanent inhabitants of Rome. Under the reforms, every male who held property was obliged to serve for 16 years between the ages of 17 and 60, with service after age 47 “within the walls of the city” (Garrison, 1922, p. 50). In practice, however, authorities tried to maintain an upper age limit of 35, and the burden of military service was generally much less. Even during the perilous period of the Second Punic War, a survey showed an average of seven years of cumulative service (Goldich, 2011, p. 4).

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In fact, contemporary records show that special medicinal wines were often “sent in bulk a considerable distance, . . . but as it was for the military hospital, no duty charges were imposed” (Davis, 1970, p. 105).

<sup>16</sup> Edwards, 2000, questions whether this support was much more than the small amount the Athenian state awarded “to those unable to fend for themselves” and suggested that such a stipend was a mechanism “making it unnecessary for impoverished citizens to seek private financial help.”

The nature of service was determined by the social and economic standing of the resident in the community, as determined by his tribes, his *census*, his classes, and his centuries. To wit,

every citizen was assigned to one of the classes according to his wealth and, having been put into his proper class, was then enrolled in one of the centuries in which members of that class were grouped, the citizens could not be distributed into appropriate centuries until the value of the property had been ascertained; and this among other things it was the business of the census to do. (Last, 1945, p. 35)

Since each soldier was required to provide his own military equipment, the most affluent citizen had the most strenuous service requirements, initially as infantry. The less affluent but still comparatively well off, the *infra classem*, served as light-armed troops; the poor, known as the *capite censi*, were normally exempt from military service. This citizen army had “no medical arrangements for the care of the sick and wounded beyond the ordinary wound-dressing we have seen in the *Iliad*” (Garrison, 1922, p. 49). Roman armies customarily took their wounded with them, and it was common for the wealthy to open their homes to care for the wounded (see Majno, 1975, pp. 381–382).

By the 3rd century B.C., as Rome moved to establish its control beyond the Italian peninsula, its army became “an army of conquest.” A system of pay and longer service was instituted, and the phalanx was abandoned in favor of a more flexible system in which smaller groups of men, called *maniples*, could maneuver more independently on the battlefield. Thirty maniples arranged in three lines with supporting troops constituted a *legion*, totaling between 4,000 and 5,000 men. Goldich notes:

The wars of Roman expansion within Italy, and against Carthage, could be fairly presented to the average Roman as wars of survival, self-defense, or expansion of Rome within recognized social and cultural boundaries. The wars of imperial expansion outside of Italy scarcely fit into this category. The same was true, albeit to a lesser extent due to less-prolonged and less-intense resistance, of Roman expansion in Greece and Macedonia. . . . Soldiers were deployed months of travel time away from their homes and families in Italy. Home leave of any sort was logistically impossible. Draftees could find themselves stationed in Spain, Greece, or the Balkans for several years. (Goldich, 2011, p. 9)

In 107 B.C., fearing a barbarian invasion of Rome, Consul Gaius Marius did away with the restriction of land ownership, opening up army service to all Roman citizens, regardless of economic or social status. The pedigree of the army was further reduced with the extension of citizenship to all those living in Italy as an outcome of the Social War (91–88 B.C.). The army also recruited soldiers from beyond Italy with the promise of citizenship. These changes had profound effects on the very social and political fabric of Rome. Men of the upper class, if they deployed to war at all, went as

commanders or staff officers, rather than serving in combat units. Service in the army fell to conscripts and volunteers from the

lower classes incapable for economic reasons, or lack of physical propinquity to the city of Rome, to participate in the political process; requiring long-term deployments overseas to conquer rich new territories or garrison them once conquered; and legitimated by economic survival or possible advancement. (Goldich, 2011, p. 12)

Beginning at the time of Marius, the need for manpower to fill the ranks of the “transient legions and . . . the various armies of military dynasts” (Campbell, 1994, p. i) grew steadily to fight the civil wars and foreign conquests.<sup>17</sup> As military service became longer, soldiers expected regular pay and a suitable reward of money or land at the end of their service. Campbell notes that, “since the state did not assume responsibility for this, individual commanders tended to seek benefits for their men” (Campbell, 1994, p. 7). As a result, soldiers felt an allegiance to their individual commanders, who looked out for their interests, rather than to Rome itself. The support they received, however, generally did not extend to their medical care. During the period of the Republic, there were only

private doctors in the army, brought by the general and by those who could afford them, and there was no corps of doctors but only a kind of *de facto* medical service of *soldier-medici*—soldiers in the ranks specially detailed for the post who gathered their craft within the legion. (Nutton, 1969, p. 260)

After civil wars and with the founding of the Empire, it was possible to talk about “the” Roman Army. Shuckburgh, 1903, p. 191, notes that, “Now, the military oath was taken to one man—the Emperor. The commanders of legions were his *legati*. He regulated the pay, the years of service, and retiring allowances for all alike.” Augustus, the first Roman Emperor (27 B.C.–14 A.D.), established an independent army pay treasury (*aerarium militare*) to provide funds for the lump-sum annuity paid to soldiers on their retirement.<sup>18</sup> Those who served through to retirement received a substantial payment equal to 14 times their annual salaries, and by one account, half of those

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<sup>17</sup> Recruiting was often by conscription, as Goldich notes, “huge numbers of men, with minimal formal and legal procedures, were swept up into the armies of the various competing Roman generals. Hundreds of thousands of Roman citizens, almost all poor farmers, were drafted. Some, depending on the luck of the draw and the fortunes of their leaders, remained in service for the 16-year/campaign limit or even two decades or more; others were released after two or three years of service” (2011, pp. 13–14).

<sup>18</sup> Initially, Augustus gifted the treasury from his own wealth and allocated a 1 percent tax on “goods sold at auctions or by contract.” Later he added the revenue from an inheritance tax of “5 percent on all legacies except those from the nearest relatives” (Shuckburgh, 1903, p. 250).



recruited into service lived through to retirement (see Oughtred, 1980, p. 58). They also received “outstanding medical care” (Rankov, 2007, p. 69).

At the height of Rome’s power during the *Principate*, or early Roman Empire (27 B.C.–235 A.D.), service in a Roman legion was stringently controlled. Recruits for the infantry, both volunteers and conscripts, had to be freeborn, pass a physical, and be of good character. They were enlisted for extended periods of service, initially for 16 years of active service followed by 5 years in reserve. This was later extended to 25 years of service (see Campbell, 1994, p. 20). When they entered, they received four months of training, after which, according to Vegetius, they “receive[d] an indelible mark on their skin, are entered on the records, and are accustomed to take the oath” (Davies, Breeze, and Maxfield, 1989, p. 13). During normal times, recruits were to be no older than 35, but it was reported that three-quarters were between the ages of 18 and 23 years of age (Davies, Breeze, and Maxfield, 1989, p. 7).

There were a number of reasons a free citizen of Rome might have wanted to join a Roman legion that can be summed up as pay, pensions, prestige, and medical care, if wounded.

### **Pay**

Soldiers of the citizen army of early Rome appeared not to have been paid wages and accepted service as an obligation of citizenship. Starting in the 2nd century B.C., records show that soldiers received pay, which was exempt from direct taxation. Regular pay was often augmented by gifts from the emperor in celebration of an event and a division of war booty. In the provinces, surviving records indicate that private merchants paid extortion.

### **Pensions**

On completing their 20 or 25 years of service, soldiers received a cash payment or a grant of land.<sup>19</sup> In addition, veterans were exempt from compulsory municipal service, public works, and market taxes. They held their land tax-free in perpetuity and could pass it down to their heirs. They also received cash to buy farm equipment and were granted seed grain.<sup>20</sup>

The pensions were also given to those who served honorably but were unable to continue service due to a disability from wounds or disease. If the disabled had served

<sup>19</sup> Eventually, the supply of *ager publicus*, public land, ran out, and by the second half of the 1st century A.D., a cash gratuity was the norm. A Roman chronicler of the period asserted that the purpose of these pensions and land grants was to prevent veterans, after being discharged, from being “tempted by age or necessities to join the agitators for a revolution” (Suetonius, 1998).

<sup>20</sup> According to Sivan, 1987, p. 770, the law established in 364 A.D. allowed a veteran to choose a legal residence, in a city, and to own fields elsewhere from which he could derive an exclusive, tax-free living. Veterans were also encouraged to “cultivate the neglected properties of absent owners and lands, which had not been tilled for a while. The profits of such occupation were to be enjoyed solely by the new occupants without a challenge by the legal owner.”

for at least 20 years, he received the same as any other honorably discharged soldier. For lesser periods of service, he received a reduced pension, “calculated pro rata from the term he had completed” (Southern, 2006, p. 164).

The issue of pensions for widows and orphans was often less straightforward. In a tradition that extended well into the modern era, soldiers in the ranks were forbidden from marrying, but in fact, many soldiers had wives and children. To this point, the noncitizen soldiers of the auxiliary, when retired, were granted the right to marry and citizenship that extended to their children and descendants. An edict of 140 A.D. limited citizenship to only the children born after the soldier retired from service.<sup>21</sup>

Roman soldiers joined burial societies, which paid out substantial sums on the retirement or death of a member, providing an early form of life insurance. Payments were also made if a soldier was dismissed because of wounds or illness (Lewin, 2003, p. 10).

### **Prestige**

There was also the matter of prestige that comes from belonging to an elite unit. Davies, Breeze, and Maxfield, 1989, p. 28, reports that

a recruit could expect that . . . no civilian would dare to strike him but he could beat up a civilian with impunity, he could avoid all the delays of the law courts, make a will while his father was alive, and be a man of great wealth. Initiative and ability were quickly recognized and rewarded.

### **Medical Care**

While under the Republic, medical care had been “haphazard and depended greatly on the attitude of the general” (Davies, Breeze, and Maxfield, 1989, p. 209), Augustus understood the importance of providing medical care to his far-flung and expanding legions. The army established its own medical training program and standardized care based on its own medical manuals. The military physician Pedanius Dioscurides produced a medical text, praised by Galen, which remained in use for over a millennium. *De Medicina*, written by Aulus Cornelius Celsus during the time of Augustus,<sup>22</sup> was noteworthy, especially the chapters “Treatment of Wounds,” “the Extraction of Foreign Bodies,” and “Amputations.”<sup>23</sup> Where the Greeks could not control bleeding, the Romans knew that “the veins that are pouring out blood [were] to be seized, and . . . tied in two places, . . . [and] when the situation does not allow even this, the veins can

<sup>21</sup> See Southern’s discussion of “diplomas,” the retirement certificates, at Southern, 2006, p. 165. Also the discussion of “Soldiers, Marriage and Family Life” in Campbell, 1994, pp. 151–159.

<sup>22</sup> For a further discussion of Celsus’s work, see Southern, 2006, p. 236. *De Medicina* was widely read, then lost and rediscovered. In 1478, it became the first medical book to be printed.

<sup>23</sup> These chapters are reproduced in Davies, Breeze, and Maxfield, 1989, pp. 231–236.



be cauterized with a hot iron.”<sup>24</sup> Celsus’ description of the amputation of a limb was as relevant for the army of his time as it was for armies as late as the early 20th century, as “the operation . . . [he] described . . . was used in the First World War for stumps painted after emergency amputations” (Davies, Breeze, and Maxfield, 1989, p. 217).

In the Roman army of the Principate (27 B.C.–284 A.D.), a medical unit consisted of a trained medical officer (*medici*) and a supporting staff of orderlies, stretcher-bearers, and dressers (*medicus*).<sup>25</sup> While the *medici* took the military oath as soldiers, they “ranked with the ‘*immunes*,’ those who receive freedom from certain routine duties in return for the performance of certain services” (Nutton, 1969, p. 262). However, the exact rank and hierarchic position of the *medici* within the army is not clearly known. It appears that some joined the army for limited terms of service, less than the 25 years of a regular recruit, and some may have served a full term of service to retirement (see Oughtred, 1980, p. 59, and Nutton, 2004, p. 182). It is likely that many were Greek, since, as Nutton, 1969, p. 265, points out, “most doctors in the first two centuries A.D. . . . [were] of Eastern origin, and as the profession of medicine in the East carried status and respect.” The general competency of *medici* is suggested by the surgical instruments excavated from the ruins of Roman military hospitals and the fact that after leaving the army they were allowed to join a “select group of civilian doctors who possess immunity from certain taxes and civic duties” (Nutton, 1969, p. 266).<sup>26</sup>

During the Principate, the army provided a range of medical capabilities that were unique in recorded history. The medical unit included animals and vehicles for transporting patients and supplies. During a march, the unit and its equipment traveled in the middle of the column, for “safety and ease of access” (Davies, Breeze, and Maxfield, 1989, p. 215). Roman military forts in the 1st and 2nd centuries A.D. had hospitals (*valetudinaria*) to facilitate the treatment and recuperation of sick and wounded soldiers, and one of the prescribed duties of a commanding officer was to inspect the sick. Legion hospitals were designed to accommodate upwards of 10 percent of the legion’s personnel, with remote hospitals on the frontier being larger.<sup>27</sup> Thus, the care a Roman soldier received was strikingly different from that available to the average Roman citizen. There is no evidence that there were public hospitals in Rome, and while some physicians appear to have been paid with public funds from time to time, their numbers seem to have been inadequate for the task (see Majno, 1975,

<sup>24</sup> From Celsus’ *De Medicina* [Treatment of Wounds], as presented in Davies, Breeze, and Maxfield, 1989, p. 231.

<sup>25</sup> *Medici* were often recruited from outside of Italy, often from Greece. They were given the status of an equestrian (knight) and full citizenship “with the privileges of wearing the ring of the knightly class” (Garrison, 1922, p. 62). Nutton, 1969, p. 266, cites Cicero that “The customary use of the *medicus* (to dress wounds) is well established and the *medici* are looked to by their fellow legionaries for their specialized function.”

<sup>26</sup> On the surgical instruments, see the extensive discussion in Goldsworthy, 2003, pp. 355–367 and 381–393.

<sup>27</sup> See the extensive discussion of the archeological remains of Roman military hospitals in Majno, 1975, pp. 382–389.

pp. 391–392). A number of scholars have concluded that the quality and effectiveness of Roman military medicine were generally not surpassed until at least the 17th and 18th centuries, and in some areas, the care a soldier received during World War I can be found in Roman medical guides of the 1st century A.D.

The care a Roman soldier received was designed to have both immediate and long-term effects. In noting how care of the wounded affected their performance on the battlefield, Garrison, 1922, p. 52, refers to Livy's account of the "demoralization of the fighting line by the misery of the wounded, when the primal duty of evacuation is neglected." Medical care had another role to play. It was one of the several remunerations soldiers received in exchange for an oath of loyalty to the emperor. Besides retirement pay and grants of land, soldiers with serious wounds and those too ill or too weak to work were "invalided out" of the army, receiving the same pension and tax-free land they would have received if they had served until retirement.

These centralized structures for the care of soldiers disappeared well before the final fall of the Western Empire at the end of the 5th century A.D. The evidence suggests that, by 350 A.D., Roman military medicine was no longer adequate to the task. While the saga of Western European history moved into the Dark Ages, the Eastern Empire (Byzantium) continued for another thousand years, until the Ottomans took Constantinople in 1453.

### Byzantium

In the Eastern Empire, the Emperor Maurice (582–602 A.D.) modernized and expanded the military medical corps in 591 A.D. He introduced an innovative system for the evacuation of the wounded from the battlefield, as Garrison, 1922, p. 79, notes:

In his treatise on strategy the Emperor Mauritius introduced a kind of sanitary formation for his cavalry, consisting of 8–18 unarmed *deputali* assigned to each detachment of 200 to 400 men, in addition to physicians. The sanitary personnel, later called *scribones*, followed the fighting columns at a distance of 200 feet in order to bring the severely wounded out of danger during an engagement. To this end the saddles of their horses had two ladder-stirrups on the left side, and flasks of water were carried to revive the faint. The bearers received a piece of gold for every wounded soldier rescued, and as they collected the arms—weapons—of the wounded and of the survivors after the battle, they came in for a share of the booty.

The long-term care of wounded soldiers was also addressed. Legend has it that Zotikos, under the direction of Constantine the Great, organized the first veterans' hospitals, as well as leprosaria and orphanages.<sup>28</sup> In the 6th century, Justin II established a home for crippled soldiers, and in the 12th century, Comenius I established a home for sick and invalid soldiers.

<sup>28</sup> For a general discussion of the myths of Saint Zotikos see Miller, 2003, p. 53.

## The Middle Ages

After the fall of Rome, Western Europe was marked by the extreme decentralization of all political, economic, social, and military functions. The military of the early middle ages was characterized by

comparatively small bands of mailed, counted knights, a professional class of fighting men who enrolled in the service of the king or wealthy nobleman. . . . Each man of noble blood received military training; but the only aim of this training was to enable the future knight to control his horse, to handle lance and sword with skill, and to show courage and determination in charging the enemy. (Dupuy, 1980, p. 47)

The basis of the feudal system was land ownership and military service. One presumably higher-ranking individual (a *lord* or *liege lord*) possessed a territory, while another (a *vassal*) could supply the military service (either personally or by training and leading others). The former could grant the latter some portion of the territory (a *fief*) in exchange for specific services, to be rendered on demand. The original purpose of the fief was to provide inheritable, revenue-producing property to provide the means to fulfill the required duties. In some countries, the highest-ranking individual was the king, who technically owned all the land, with all nobles being his vassals, and each noble had his own vassals, making matters extremely complicated.<sup>29</sup>

One of the powers liege lords exercised over their vassals was requiring them to supply “contingents of armed knights for warfare and for garrisoning castles” (Baldwin, 1986, p. 260). There was also an

obligation for all freemen to serve in the army if summoned, and broad levies might be called up for defensive service, armies for offensive operations came more and more to be dominated by those who could afford to equip themselves with horses, armor, and the supplies and kit needed for several months in the field. (Rogers, 2007, p. xxiii)

If the demands of service required extending a mandatory period of service, it could be paid for with wages. Over time, however, it became more common for vassals to meet their military obligations through financial contributions rather than through direct service. By the time of Philip Augustus, royal armies included both feudal knights and “other knights and sergeants [mounted and foot], who were paid wages” (Baldwin, 1986, p. 279). By one account, 90 percent of Philip’s soldiers were paid. During his

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<sup>29</sup> For example, when Philip Augustus was crowned King of France in 1179, he was attended by Henry II, the King of England. Besides holding the English throne, Henry was overlord of most of the western half of France, carrying the titles of the Duke of Normandy, Duke of Aquitaine, and Count of Anjou, but was also vassal to Philip for his French lands. See Baldwin, 1986, p. 7.

campaign in Normandy, he paid a 30-percent premium over the wages King John of England offered. In the end, just under one-half of the total cost of the campaign was spent on military wages (Baldwin, 1986, p. 169).

Existing records offer extensive accounts of the means feudal kings used to raise their armies. Detailed inventories of feudal obligations were necessary to compute the total number of knights that might be pressed into service. Yet the records have little to say about the treatment of wounded soldiers. Generally, however, it fell to the feudal lord to provide for his own needs and for care for the knights in his service or to the monasteries to care for disabled soldiers who had signed on for wages. During the feudal period of the early Middle Ages, Cantlie notes “what medical attention there was available was devoted to the treatment of nobles and knights” (Cantlie, 1974b, p. 10). The ordinary soldier

received little medical attention in war—“he was brought to be sacrificed, he was used while in health and when sick or wounded left to die.”<sup>30</sup> . . . The scope of the military surgeon was limited by the policy of discharging soldiers who were unfit rather than treating them . . . [and was] based upon the cynical though economic fact that it cost more to cure a soldier than levy a recruit. What medical attention there was available was devoted to the treatment of the nobles and knights. (Cantlie, 1974b, p. 10)

The French military writer Blaise de Montluc (1502–1577) was reported to have said that, even at the end of the period, “the best thing that could happen to a fighting man in battle was to be killed outright” (as quoted in Garrison, 1922, p. 83). There were, of course exceptions, and Mitchell points out “the presence of . . . [military] field hospitals from the late twelfth century onward shows a coordinated and practical approach to the care of the sick and wounded on campaign(s)” (Mitchell, 2004, p. 60).<sup>31</sup>

During the Medieval period, the medical profession developed along two paths that affected the way medical services were provided to armies throughout Europe. Cantlie recalls:

many of the physicians in Europe at the close of the tenth century were Jews. . . . The clergy, . . . claiming that the practice of medicine was their particular privilege, . . . passed laws declaring that no Jew might be a physician or treat a Christian. Consequently, the practice of medicine at this early period lay in the hands of the clergy and the monks. And it was in the shelter of their religious houses that both military and civilians received treatment. (Cantlie, 1974b, p. 7)

<sup>30</sup> The deaths of wounded soldiers were often hastened at the hands of their comrades: “For the severely wounded who had no chance of recovery, it was customary . . . to quietly slit their throats on the field of battle and put them out of their pain” (Cantlie, 1974b, p. 11).

<sup>31</sup> Mitchell’s work was informed by the archeological record and the contemporaneous reports in manuscripts left by the chroniclers of the period. See Mitchell, 2004, p. 4.

After 1163, when the Church forbid the clergy to shed blood,<sup>32</sup> priests and monks continued to practice medicine, and the surgery was relegated to their former lay assistants whose primary duty was shaving the monks' heads and thus arose the lower profession of barber-surgeons.

### Care for the Wounded During the Crusades

The Crusades, which started in 1095 and ended in 1291 with the fall of Acre, was one of the great eras of human history, disrupting the social order and shaping the Mediterranean world for centuries to come. Marshall notes "the armies [of the Crusaders] were not just composed of trained soldiers but ranged from the nobility to paupers, clergy to criminals, businessman to con artists" (Mitchell, 2004, p. 1). Like most feudal armies, they were "characterized by a general lack of discipline, insubordination, and the ever-present danger of a willful act of some subordinate commander. The hierarchy of command was based upon social status, not on professional capability or experience" (Dupuy, 1980, p. 47). During the time of the Crusades, just the act of traveling by land and sea from Western Europe to the Middle East was fraught with danger. Once in the Holy Land, Cantlie tells us, "the Crusaders seem to have forgotten the hygienic measures of the Romans" (Cantlie, 1974b, p. 8). The hot and dry climate of the Holy Land was unforgiving, and the unsanitary conditions allowed dysentery, fever, and typhus to run wild. Many died even before they got into battle. It has been estimated that, among the "upper echelons of the crusader armies" (Mitchell, 2004, pp. 176–177), death rates of 25 to 35 percent were common, with half coming from battle and the other half from disease and other nonbattle ailments. Considerably higher deaths and the rate of casualties might be expected among the foot soldiers due to their poor armor and lack of reserve food. However, the firsthand accounts of the period generally do not discuss the conditions of ordinary soldiers.

There are ample accounts of physicians and surgeons accompanying their king and noblemen on the crusades. The best of these were trained in the medical colleges of Salerno, Montellier, Paris, Bologna, and Padua or, by the end of the period, Oxford and Cambridge. Others, particularly the lesser skilled barber-surgeons, learned their craft as apprentices. It would be wrong, however, to surmise that this was the entire medical care available to the crusaders, especially during the later crusades of the 13th century. There is no evidence that, during the First Crusade (1096–1099), the armies systematically provided for their wounded, but it is likely the wounded were taken to the nearest friendly town for care. By the Third Crusade (1189–1192), however, Emperor Frederick of Germany had "a great many wagons . . . constructed for sick travelers so that the infirm should not delay the healthy and the crowd of sick and des-

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<sup>32</sup> The church spoke through edicts arising out of the councils of Clermont (1130) and Tours (1163); the "*ecclesia abhorret a sanguine* [the church abhors bloodshed]" assertion is associated with the latter. This was followed up in 1215 in a further pronouncement by Pope Innocent III intended to stop all surgical activities.

titute should not perish on the way” (Mitchell, 2004, p. 59). In addition, in 1180, the first reference to an actual field hospital was reported:

Those soldiers of the army who were wounded were attended to in a mobile hospital set up in tents of the Order (of St John). Those who needed further treatment were transported to the Jerusalem hospital, or closer towns if necessary, using camels, horses and donkeys kept for this purpose. The four surgeons working for the hospital of St John in Jerusalem at the time are known to have been attached to this field hospital. (Mitchell, 2004, p. 59)

The medical treatment these wounded soldiers would have received would have left much to be desired. The first order of treatment would have been for the soul, so the first one to visit the wounded was often not the doctor but the priest. Little is known of the actual treatment a wounded crusader would have received, but the available medical texts of the period, especially the Islamic texts, echo the treatment of wounds from Roman times: pressure on the wound, cauterization of the artery, and washing with wine and vinegar (see Rogers, 2007, pp. 224–227).

In spite of, or maybe because of, the generally deplorable conditions in the Middle East, the Crusades gave rise to new institutions—hospices—that “were destined to exert great influence on the subsequent hospital movement of the Middle Ages and upon the organization of religious nursing orders that went along with it” (Garrison, 1922, p. 86). According to Marshall, 2006, p. 2, men had previously

thought little of the sufferings of those who fell in battle. No knight, at least, would have thought of giving his life to tend the sick. The knight’s business was to fight. Yet now there arose an order of knighthood [such as the Knights of St. John] the members of which gave their lives to the nursing of the sick and wounded. . . . In [their] hospital[s] many wounded Crusaders found a refuge.

During the First Crusade, after the fall of Jerusalem in 1098, various knightly orders cared for pilgrims and maintained security in the Holy Land. They were originally established to care for their own sick and wounded but later expanded to care for the poor and destitute and provide a place of safety for the traveler. In the hospital of St. John in Jerusalem in 1180, there were 11 male wards with almost 150 male nurses. The physicians and surgeons were paid generously and employed exclusively by the hospitals.<sup>33</sup>

During the Third Crusade (1189–1199), Philip Augustus of France, as part of his efforts to centralize power, established a hospice for disabled soldiers. In 1260, Louis IX of France founded an asylum in Paris for soldiers blinded in the Crusades. In addition, existing monasteries were given a quota to care for disabled soldiers or to

<sup>33</sup> According to a “highly informative manuscript discovered recently, . . . [the doctors] accompanied by two servants . . . visited the sick twice each day and checked their urine and pulse” (Mitchell, 2004, p. 69).



provide them with a pension so that they might care for themselves. This system did not work well. Few soldiers took to the discipline of monastic life, and many chose to take the annuities, which were often sold for cash or depleted quickly. Former soldiers often lapsed “into the ranks of beggars and cutthroats with which the countryside was infested” (McMurtrie, 1919a, p. 15).

### The Late Middle Ages

The chroniclers of the late Middle Ages (circa 1300–1500) provided ample accounts of the generally deplorable state of military medicine after the Crusades. In *Chroniques*, 14th-century French chronicler Jean Froissart described the first 50 years of the Hundred Years War (1336–1453). In Homeric terms, he recounts the care wounded soldiers received and the epidemics of jaundice, typhus, plague, and dysentery that ravaged all armies of the period.

While he describes the tentative progress made in the accommodations for the wounded, the treatment of wounds itself was deplorable, with much of the blame resting on the Catholic Church, which accepted the Greek theory of “laudable pus” and set out to put a complete stop to surgery as a means of preventing further bloodshed.<sup>34</sup>

There were, however, isolated pockets of progress, which unfortunately would not take hold for hundreds of years. Theoderic of Lucca, for example, in *Chirurgia* (1267), advanced the idea that the formation of pus was not essential for the healing of wounds. His student, Henri de Mondeville of France, later demonstrated “that wounds healed better and faster without suppuration [pus], and proposed that foreign objects be removed immediately, that all bleeding be stopped that the wound be closed and then dressed with compresses soaked in hot wine” (Pruitt, 2006, p. 716). Unfortunately, these findings, which preceded Louis Pasteur’s discoveries by some six centuries, were generally ignored, and the laudable pus theory persisted for centuries, to the great detriment of the wounded.

### And Then There Was Spain

A shining example that stands in direct contrast to the norm of European military medicine was the care Spanish soldiers received in service to Ferdinand and Isabella in the late 15th century. The chronicler Hernando del Pulgar described how, at the battle of Alora (1484), the first field hospital was established:<sup>35</sup>

<sup>34</sup> Rogers, 2007, p. 225, presents a counterview:

Armies in the field were usually accompanied by physicians, surgeons and barbers. . . . After giving first attention to their own employers . . . it was expected that wounded soldiers would eventually be tended, [and] despite the common view to the contrary, western European surgeons of the Middle Ages seem to have been roughly on a par with their Islamic, Byzantine and Jewish contemporaries.

To support his argument, he offers the care given to Henry V at the battle of Shewsbury in 1403.

<sup>35</sup> This innovation did not appear in the English army until 1690, almost two centuries later. See Cantlie, 1974b, p. 22.

For the care of the sick and wounded the queen sent always to the camp six large tents and their furniture, together with physicians, surgeons, medicines and attendants; and commanded that they should charge nothing, for she would pay for all. These tents with their appointments were called the Queen's Hospital. (as noted in Garrison, 1922, p. 95)

After the surrender of Malaga in 1487, the Queens Hospital brought 400 hundred *ambulancia* (wagons) into the city to care for the wounded.

Queen Isabella frequently visited the wounded, and it was reported that she said: "Let me go to them. For they have no mothers here, and it will soothe them in their pain and weakness to find that they are not uncared for" (Lynch, Weed, and McAfee, 1923, p. 27). Her descendant, Charles V, carried through her benevolent care for his soldiers.

## The Renaissance

During the Renaissance, the nature of war changed profoundly with the rise of nation-states, the professionalization of armies, and the introduction of gunpowder, and with it personal firearms and artillery and new tactics—all of which increased the severity of battle injuries.

The political changes of the Renaissance and the 16th century set the stage for the professionalization of military medicine in concert with the nationalization of state militaries. Care for the wounded soldier became more routine by the 16th century. Leonhard Fronsperger, the most important German military writer of the 16th century, included in his treatise on *Imperial Courts-Martial* (1555) regulations concerning the duties of a physician-in-charge and of the field barbers. He tells us that, in the army of Charles V (1500–1558), reflecting the care given to the soldiers by his grandmother Isabella of Spain, field barbers or surgeons served with each troop. They were "well-versed, skilled, experienced, and trained men, and not a poor bearded shaver . . . [so that] the killing and maiming of good soldiers may be prevented. . . . [They serve] like ordinary soldiers, but receive double pay."<sup>36</sup> Garrison, 1922, pp. 103–104, also notes that, in Charles's army,

The sick and wounded were sent to the baggage train and put under tents where they were attended to by physicians or barbers and nursed by the innumerable female camp followers. . . . When the army moved forward couriers were dispatched ahead to locate suitable quarters including a house for the barber-surgeons and their patients. . . . In the field the sick and wounded continued to receive their pay.

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<sup>36</sup> As described by Leonhard Fronsperger and quoted in Lynch, Weed, and McAfee, 1923, p. 27.



In France in 1550, Henry II created “ambulant hospitals” for the care of the sick and wounded; at the battle of Amiens in 1597, the Duke of Sully created ambulant hospitals (from which the word *ambulances* is derived) to follow the movement of troops and to triage the wounded to fixed hospitals. These advances were largely negated because of the introduction of firearms and artillery, which harnessed the deadly effects of gunpowder.

The use of gunpowder was known as early as the 13th century, but it was not until the middle of the 14th century that “someone discovered how to make it lethal by confining and igniting it in an open-ended tube” (Dupuy, 1980, p. 91), and the first guns were developed. While, initially, guns were less effective than crossbows or longbows, they had the advantage that soldiers could be trained to use them relatively quickly, especially compared to the months it took to learn to effectively use the crossbow and the even longer time to master the longbow. Finally, at the end of the 16th century, firearms had progressed sufficiently for France and England to discard the crossbow and longbow, and “firearms were . . . officially adopted as infantry weapons” (Dupuy, 1980, p. 91).

As profound a change as firearms had on the infantry, the development of artillery revolutionized the art of siege warfare, and artillery was later adopted for use in the field against the infantry. The key breakthrough was the casting of long cannons from bronze, brass, then iron. By the end of the 15th century, siege artillery could make short work of the traditional medieval fortifications. In the 17th century, smaller field cannons were developed, most notably, the howitzer and the mortar.

During the Renaissance, there were also important advances in the treatment of wounds, even as the general state of medical knowledge advanced little. Despite the increase in the medical services for the wounded soldier, the widespread use of firearms and artillery dramatically increased the severity of battle injuries. Devastatingly gruesome gunshot wounds, often resulting in shattered and compound fractures, replaced simple, clean cuts, and amputations of limbs became common. In 1497, the German Hieronymus Brunschwig published the first book to discuss the treatment of a gunshot wound and “provided the rationale for cauterizing all war wounds, . . . initiating a controversy the persisted for 300 years” (Pruitt, 2006, p. 716). In 1545, Ambroise Paré, a self-educated barber, challenged this orthodoxy with his discovery that treating a wound with a solution of egg yolk, oil of roses, and turpentine, rather than boiling elderberry oil and cauterization, provided better results because of the antiseptic properties of the turpentine. He also reintroduced the ligature of arteries instead of cauterization and designed an early version of a modern hemostat, making the amputation of the larger limbs a more acceptable procedure. Pruitt notes, however, that “Paré continued to believe that pus was necessary for optimum healing and searched for the ‘perfect’ salve to stimulate suppuration” (Pruitt, 2006, p. 717).

## The Legacy

Life for a soldier has always been dangerous, with the prospect of death from disease or wounds always present but diminished as medical knowledge grew and care improved. The Roman soldier of the Imperial period fared far better than those of earlier times or, for that matter, the average Roman citizen of that day. After the fall of Rome, it took a thousand years before the new nation-states of Western Europe again paid much attention to those wounded in battle. While what some have called the *age of enlightenment* promised even more improvements, the lack of understanding of the basic medical science and the advent of firearms and artillery meant that warfare remained a very deadly occupation.



## Evolution of the European System of Providing for Casualties in the Age of Enlightenment: France and Britain as the Antecedents of the American System of Care

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### France: From the Monarchy to the Republic and on

Leaving the Renaissance, we continue the story by focusing on the two countries that most affected developments in the American colonies and in the United States, up to and including the First World War, France and Great Britain. First as protagonists and later as allies, the ways each of these countries cared for its war casualties were well studied by their American colleagues to learn lessons about what to emulate and what to avoid.

After the French civil wars, Henry IV (1589–1610) responded to the plight of his former soldiers, who often were “reduced to beggary, a shameful thing for the military order,” by establishing the *Maison Royale de la Charité Chrétienne* (McMurtrie, 1919b, p. 110). Originally, this veterans’ home was open to destitute and disabled soldiers and later to the widows and orphans of soldiers killed in battle. Soon after Henry’s death, however, it was closed for lack of funds.

Henry’s son, Louis XIII (1610–1643), revived an old Carolingian system in which “disabled and infirm officers and soldiers were assigned as lay brothers (*frères lais*) to monasteries, where they eked out their existence as sweeps, gardeners and bell-ringers” (Garrison, 1922, p. 121). Under Cardinal Richelieu, the Code of Michau of 1629 “stipulated that every regiment and fortress was to be equipped with an infirmary and a surgeon” (Gruber-von-Arni, 2001, p. 6). In 1633, the cardinal started work on a *Maison des Invalides*, and two years later, he directed that each army was to have a well-regulated hospital. That *Invalides*, however, was never finished for lack of funds, which also limited these other efforts.

By the beginning of the 18th century, the prevailing political model for Europe had become the nation-state, and with it came a new model for the recruitment and care of national armies. To encourage voluntary enlistments, the monarchs of the day had to improve the living conditions of their soldiers and provide both medical care

and veterans' programs.<sup>1</sup> Accordingly, Louis XIV (1638–1715) issued the edict of January 17, 1708, which established the French Medical Corps and provided for the addition of 200 physicians and surgeons to the army, and the construction of 51 military hospitals across France. The King proclaimed:

The important services now rendered by our troops commit us to the necessity of looking after their welfare and caring for their diseases and injuries, which, in our judgment, could not be better affected than by establishing for all time, in the rear of our armies, in our hospitals and theaters of war, general and special physicians assigned to the care of sick and wounded officers and soldiers . . . the employment of these [physicians and surgeons is] to be definite and their service continual . . . whereby they will be better able to give useful aid to the sick and wounded than those serving under temporary commissions, who cannot acquire the same experience and capacity and would not serve with the devotion which is assured by continuous service. (as quoted in Sieur, 1929, p. 845)

The full transformation of the Medical Corps, however, did not take place until 1717, when the purchase of commissions was ended, and by the ordinance of 1725, “which assigned to the surgeon major of each hospital the duty of visiting and examining, as to the instruction of junior candidates in surgery” (Sieur, 1929, p. 845).<sup>2</sup> When Louis XV established the *Académie Royale de Chirurgie* in 1731, it was made up largely of military surgeons. Nevertheless, their position within the army was never secure. They held no military rank and were “without definite hierarchical status, non-existent powers and contested authority” (Sieur, 1929, p. 852).

Unfortunately, the preferred treatment for a gunshot wound to an arm or leg continued to be amputation. The new surgical techniques of flap and lateral-incision amputations, the use of locked forceps, and the screw tourniquet greatly reduced the mortality rate from amputations below the knee. For the first time, military surgeons were able to prepare the amputated limb for prosthesis, even as the primacy of the laudable pus notion continued the unnecessary introduction of infections. Surviving an amputation, however, meant a steady stream of crippled veterans who were largely unemployable as a legacy of war long after the battles were over.

Louis XV's initial response to the problem of disabled veterans was to issue an edict making begging a crime under penalty of death. That regulation, however, failed,

<sup>1</sup> In a similar move to encourage voluntary enlistments during the transition to an all-volunteer force, the American army instituted Project VOLAR; see Rostker, 2007b, pp. 153–172.

<sup>2</sup> Garrison, 1922, p. 152, citing an early history of surgery by J. S. Billings, observes that, as the 18th century began,

The only city in which there were any special opportunities for the study of surgery was Paris. There was no place for the barbers or the barber-surgeons in the Universities of Europe, and they had no institutions of their own in which any teaching worthy of the name could be contained. Many of them had learned something in the camp or on the battlefield, which was the great practice school for surgeons, as it had been for three centuries.

and Garrison, 1922, p. 122 tells us: “The streets of Paris and the larger towns swarmed with lame, crippled, infirm and mutilated soldiers, whose physical status . . . was that of squalid beggars.” Eventually, Louis introduced a pension system for disabled soldiers and assigned the less disabled to garrisons in frontier towns, the *compagnies détachées d’invalides*. By 1763, there were 150 such invalid units, with 15,000 troops (Snyder, Gawdiak, and Worden, 1991, p. 6).

### L’Hôtel des Invalides

Louis XIV also returned to his father’s and grandfather’s idea of building an institution to house disabled veterans. On November 24, 1670, he reestablished *l’Hôtel des Invalides* as a hospital for aged and disabled soldiers. For its upkeep, he provided a stream of funds equal to a fixed proportion of the total military budget (McMurtrie, 1919a, p. 17). He also increased the medical personnel serving with the army in the field.<sup>3</sup>

The complex known today simply as *Les Invalides* was built to house 4,000 pensioners, and between 1676 and 1704, more than 15,000 applied for residency (McMurtrie, 1919b, p. 112). While *Les Invalides* was technically a residence, residents were granted “leave” to return home, with the institution continuing to provide their clothing and a small “allowance” for their upkeep (McMurtrie, 1919a, p. 19). When the leaves were extended from the initial three years to an indefinite period, this arrangement became a de facto pension. In 1764, an “invalid’s pension” was formally instituted. This was the first pension explicitly granted to disabled servicemen.<sup>4</sup>

The provision of pensions soon was greater than the residence program at *Les Invalides*. In 1776, *Les Invalides* housed about 2,500 veterans; another 6,000 served in *compagnies détachées*; and perhaps as many as 18,000 were retired, “in the provinces,” on pensions (Woloch, 1979, p. 9). On the eve of the French Revolution (1788), a census showed that *Les Invalides* had 2,870 residents, 1,107 of whom were 70 to 92 years old and 1,488 of whom had suffered amputations or were “otherwise wounded, decrepit or infirm” (McMurtrie, 1919b, p. 112). By 1790, with approximately the same number in residence, there were some 26,000 pensioned soldiers, most of whom lived outside the capital (McMurtrie, 1919b, p. 113).

<sup>3</sup> Garrison, 1922, p. 122, provides an example: “The medical personnel of the army had increased to the extent that at the battle of Seneffe (1674) the intendant Robert was able to assign 230 military surgeons to three villages, with nurses and material adequate for the care of large number of wounded.”

<sup>4</sup> The pension was increased in 1776 and again in 1791, “closing the large discrepancy between [the pensions of the common soldier] and those of officers” (Snyder, Gawdiak, and Worden, 1991, p. 7).

### The French Revolution

Inspector General Sieur's assessment of the French Medical Corps, on the eve of the Revolution, paints a depressing picture of the medical care a sick or wounded soldier might receive. He saw the medical service as an

incomplete organization, charging at the caprice of each minister; an absence of all hierarchy with reference to officers of other arms of the service; subordination of the technical personnel in an incompetent administration often hostile, and ever ready, under pretense of economies never justified, to disband personnel and suppress hospitals; a medical service deprived of nearly all ways and means of efficiency, particularly when the armies were operating far from important hospital centers, no special personnel for rounding up and relieving the wounded; transportation reduced to a few caissons, ordinarily used for carriage of material, or borrowed haphazard, as opportunity offered. (Sieur, 1929, p. 851).

Soon this would change, but not for the better. While the National Assembly (September 1792–October 1795) passed legislation to improve the status of medical officers, as far as the army was concerned medical officers continued to be regarded “as simple employees of the army, without rights or officer status, to be discharged from the service at discretion” (Sieur, 1929, p. 382). Moreover, in 1792, in a spirit of egalitarianism, one of the first acts of the National Assembly that had a deleterious effect on the French Medical Corps was to close 18 medical faculties and 15 medical schools throughout France, opening the practice of medicine to anyone who could afford the price of a license. In 1793, all civilian surgeons and physicians were subject to military conscription. A year later, the military teaching hospitals, *écoles de santé*, were created to provide medical personnel to the army. Unfortunately, the previous decision to close the country's medical schools undermined the general quality of the candidates who were to be trained at the military teaching hospitals. The situation remained unsatisfactory even when control of the army passed to Napoleon.

As for veterans, the National Assembly found that the system of military pensions was “riddled with inequities and the spoils of aristocratic privilege” (Woloch, 2000, p. 146). While pensions provided benefits to retired and disabled soldiers, royal favorites received the majority of funds. About one-half of those receiving pensions accounted for only 14 percent of the budget, with the top 90 individuals accounting for 9 percent (Woloch, 2000, p. 146). In 1790, the National Assembly revised the system, providing that all retiring professional officers and soldiers receive the same compensation, which would be based on rank and length of service. In 1791, veterans were given the option of residing at Les Invalides or living on their own with a pension, and about one-half of the residents of Les Invalides moved out. In 1793, the rules were again changed, giving seriously wounded soldiers of lesser ranks the honorary rank of lieutenant or captain, depending on the extent of their injury. The 1793 law also pro-

vided for soldiers' widows, who were granted 50 percent of their husbands' salary, with the pension soon to be raised to 300 livres regardless of their husbands' rank.

Schools were also established at Les Invalides both to provide vocational training for soldiers so that they might take up occupations in the civilian economy and to fill the time of those "needlessly obliged . . . to live an idle and hence quarrelsome existence" (Woloch, 1979, p. 155). In 1798, the director of the schools claimed that "nearly 3,000" veterans who had lost an arm had acquired the knowledge necessary to "fill distinguished positions in the Republic."<sup>5</sup> The school at Les Invalides not only filled a utilitarian and humanitarian purpose, it also filled an ideological purpose and provided a short preview of an important veterans' program of the next century. As a creation of the egalitarian Committee of Public Safety, the program implied that veterans had a special right to education. The Deputy Commander of Les Invalides at this time observed that no other state had founded a similar institution: "[E]verywhere else the recompense accorded to veterans has been vain and sterile; it is left to the French Republic to procure a solid and advantageous reward: education" (as quoted in Woloch, 1979, p. 158). In words that could be used to describe the rehabilitation programs of World War I,

*mutilés de guerre* [disabled soldiers] who could no longer practice their native agricultural or artisan vocations were being reequipped to perform white-collar functions. Successful pupils could begin a new productive life, beneficial to the nation, to their families, and to themselves. (Woloch, 1979, p. 159)

This early experiment in rehabilitation "flourished for several years until it was suppressed . . . in favor of a school for war orphans" (Woloch, 2000, p. 152).

### **Napoleon Bonaparte**

To defend the Revolution, the mass conscription of about 800,000 citizens was ordered in 1793—the *levée en masse*. This provided France with the largest army in Europe and, together with new methods of warfare that pressed operations regardless of season, produced large numbers of casualties that would have overwhelmed the best organized medical service. But such a service did not exist anywhere in Europe. While Rothenberg, 1980, p. 231, concludes that, "for all its shortcomings the French medical service was the envy of other armies whose arrangements remained, by and large, even more lamentable," this is faint praise when he also notes, "Frederick the Great [of Prussia] had . . . little concern with severely wounded soldiers and rumor had it that surgeons had been instructed to let patients die if there were unlikely to return to active service."

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<sup>5</sup> The number appears inflated because, according to Woloch, 1979, p. 159, the director had also noted that "at the end of 1797 some 1,120 veterans had enjoyed the benefits of the institution." A year later the number was up to "more than two thousand veterans," and a few months later, "nearly, 3,000 veterans."



In 1799, Napoleon Bonaparte, a Corsica-born French artillery officer, staged a *coup d'état*, installing himself as First Consul and later, in 1804, Emperor. His view of military medicine was unambiguous, but his actions were often inconsistent. In 1800, he declared that the “medical service of the army rests upon temporary commissions. . . . There is no medical service in the proper sense of the term” (as quoted in Sieur, 1929, p. 855), and yet he apparently had high regard for the services of two senior medical officers, Pierre-Francois Percy and Dominique-Jean Larrey. While both officers made significant improvements in how war casualties were cared for on the battlefield, particularly in the introduction of a mobile ambulance corps for evacuating the wounded,<sup>6</sup> even they could not overcome Napoleon’s mistrust of physicians and surgeons.<sup>7</sup> As a result, between 1800 and 1802, the number of military doctors fell by half. By 1802, only 210 physicians and 500 surgeons were serving with the army. In 1803, he reduced the number of military hospitals and closed the military teaching hospitals. The results were catastrophic. Napoleon reversed course and, in 1804, reopened a number of medical facilities and colleges. By 1806, 1,051 surgeons, many of dubious quality, were serving with the army, but Napoleon never admitted them to “full equality with the army” (Rothenberg, 1980, p. 230) and never acted upon Percy’s recommendation for the establishment of a permanent surgical corps.

Disabled veterans’ pensions under Napoleon were far less generous than they had been during the early years of the Revolution. In 1799, a new set of laws for treatment of veterans backed away from the more egalitarian values of the revolution. These lowered the payment scale and, once again, made rank and length of service more important than the degree of disability. There were to be “no more disabled honorary lieutenant” discharges (Woloch, 2000, p. 159). Not only were payments lower, they favored officers. In one way, though, he tried to be more generous. Emulating the policies of the Roman emperor Augustus, Napoleon also proposed to settle French veterans on German and Italian lands he had annexed. After the first “veterans’ camps” proved contentious, however, he abandoned this plan.

### **The Restoration to the Second Empire**

After Napoleon’s final defeat at Waterloo in 1815, the French entered a period of political instability, which was reflected in the poor medical care soldiers received during the Crimean War (1853–1856), the war with Italy (1859), and the Franco-Prussian War (1870–1871). Even as medical knowledge advanced with the first use of anesthesia,

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<sup>6</sup> Of particular note is the work of Baron Dominique-Jean Larrey, Napoleon’s medical director and chief surgeon, and his advocacy for rapid “primary” amputations, and surgical hygiene practices. See Rothenberg, 1980, pp. 228–229.

<sup>7</sup> Even as Napoleon disliked and distrusted physicians, his elite Imperial Guard received excellent medical care. See Rothenberg, 1980, pp. 230–231.

which allowed more-deliberate amputations,<sup>8</sup> the failure to organize an efficient medical service meant that the advances did not greatly benefit the common soldier.

Inspector General Sieur tells us that “[l]ittle interest attaches to the service of the medical corps during the Restoration” (Sieur, 1929, p. 41). While medical officers struggled for recognition of their role in the army, they were barred from directing even their most menial administrative functionaries, and even their orders to nurses could relate only to medical care of patients. Sieur, 1929, p. 214, reports that, at the beginning of the Crimean War, the French medical service “found itself lower in morale, technically impotent and numerically inadequate.”<sup>9</sup> While the situation was initially very similar to that of their British allies, the French had neither a Florence Nightingale nor the intervention of a civilian Sanitary Commission to make needed changes. While conditions among the British forces steadily improved, sanitary conditions for French troops remained deplorable. Seasonal and epidemic diseases ravaged the force, and scurvy and typhus caused many deaths. The situation did not change during the war with Italy in 1859 or during the war with Prussia in 1870.

The extent to which the French had fallen behind in the provision of medical services can be seen by Sieur’s comparison of the French and Prussian armies:

The declaration of war in 1870 found each Prussian soldier provided with an individual bandaging kit; each regiment had litter bearers, and companies of litter bearers were charged with the duty of aiding and supplementing the work of the regimental litter bearers. The ambulances were numerous, light, and well appointed as to personnel and matériel. In the rear, there was a service of evacuation which had for its objective the establishment of a liaison between advance formations and hospitals in the zone of the interior, thus assuring the evacuation and treatment of the sick and wounded. Each army corps had at its disposition a reserve of sanitary personnel and matériel and two hundred wagons constructed after the manner of sleeping cars, which served for evacuation at long distances. . . .

In France . . . . At the beginning of hostilities, the individual outfit of dressings was lacking, there were no litter bearers attached to either regiments or ambulances, and the ambulances were few in number, very heavy, and lacking in uniformity of type and supplies. In the rear, no provision for organization had been made. The medical service terminated at the ambulance of general headquarters and every-

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<sup>8</sup> Chloroform was first used as an anesthetic in 1847. Because it allowed surgeons to perform painful operations more slowly, they could better prepare amputation stumps for prostheses. By controlling pain, anesthesia reduced deaths previously caused by shock. Unfortunately, surgeons were not able to control bleeding and infections until much later in the century.

<sup>9</sup> Sieur, 1929, p. 214, reports that, on “debarking at Gallipoli, . . . the Chief Surgeon found twenty-seven medical officers herded together in a narrow place, with no orderlies, reduced to doing their own housekeeping, cooking and even currying their horses.”

thing relating to the evacuation of treatment of sick and wounded was left to chance. (Sieur, 1929, p. 219)

For Sieur, this deplorable situation was the result of the “torpor of public opinion . . . [and] the indifference of high command to the hostility and incompetence of the administration” (Sieur, 1929, p. 219). As late as 1878, a report presented at the International Congress of Military medicine concluded,

The situation of French medical officers was most painful, for while our foreign colleagues . . . were in position to show us the progress realized out of their own experience in recent years, we ourselves could only bow our heads and decline to assume responsibility for the inferiority of our organizations.<sup>10</sup>

Finally, in 1889, France became the last major European power to establish an autonomous military medical service for its army, but even then, medical staff was not seen as a core component of a war-fighting staff. For example, in 1914, during the early days of World War I, the chief surgeon was relegated to the “the second group of the general staff,” some 20 to 30 kilometers from the commanding general, with the result that, during the initial offensives, “army corps received orders to evacuate their wounded to stations lacking in all sanitary material and having only one section of an evacuation hospital at their disposal” (Sieur, 1929, p. 224). In the rear, medical directors complained of a lack of personnel and their poor technical competence.

While progress in providing adequate medical care for soldiers may have been retarded, there were some notable improvements in the support provided veterans. In 1831, King Louis Philippe passed a major pension reform. This law provided automatic service pensions only to those who had served at least 30 years, but it also covered disabled soldiers and their widows “if they could prove a permanent service-incurred disability of no less than 60 percent” (Snyder, Gawdiak, and Worden, 1991, p. 9). This law remained in effect until March 1919, when the “Great Pension Law” was passed, which applied to disabled veterans of World War I and also gave pensions to widows, orphans, parents, and even grandparents of those whose deaths related to their service. The size of the pensions depended on the extent of the disability and the rank of the soldier. In 1930, pensions were extended to all veterans when they reached age 50, with an additional stipend for those who had reached age 55. This was the start of the universal military pension system in France.

One further change affected the care veterans would eventually receive. As early as the 1850s, Ardant du Picq, one of the leading military intellectuals of the day, called the institution of Les Invalides an “apparatus of ostentation” and complained that “this assembly of idlers is a school of depravity in which the invalided soldier ultimately forfeits the right to be respected” (McMurtrie, 1919b, p. 114). Eventually, such observa-

<sup>10</sup> Statement by Secretary General Lefort, as reported in Sieur, 1929, p. 220.

tions led to the third pillar of support for veterans: rehabilitation that complemented pensions and soldiers' homes to complete the triad of care for veterans.<sup>11</sup>

## The Evolution of the English System

The 16th century was a period of social unrest in England, as it was throughout Europe. Rising populations after the waning of the Black Death (circa 1348), the end of serfdom, and the migration to urban centers stressed the ecclesiastical system of poor-relief to the breaking point. The Protestant Reformation added to the demise of the church-centered system.<sup>12</sup> Starting in 1536, Henry VIII moved to curb the political and economic power of the Catholic Church in England with a concerted campaign known to history as the "suppression of the monasteries."<sup>13</sup> The church-based system of local medical care was gone, resulting in an "almost complete dearth of local medical assistance" (Cantlie, 1974b, p. 20) for disabled veterans.<sup>14</sup>

### Medical Care in the Army Under the Tudors

During the reign of Henry VIII (1509–1547), the English Army regularly employed surgeons to care for the wounded. There were 57 surgeons at the battle of St. Quentin in 1557, 50 of whom were for the rank-and-file soldiers. The surgeons were provided by a guild, The Company of Barber-Surgeons of London, as a condition of the their

<sup>11</sup> McMurtrie, 1919b, p. 117, laments: "Up to modern times . . . the cripple has been always an object of charity, if not of actual neglect and mistreatment. . . . For decades every indication has pointed to the need of special training facilities for the disabled, but the community had not seen fit to provide them." One might add that this was so until relatively recently, e.g., starting at the end of World War I and most recently with the Americans with Disabilities Act of 2008.

<sup>12</sup> Some have asserted that the sharp rise in the number of beggars at the end of the middle ages was due to the "failure of ecclesiastical poor-relief" and that the rise of municipal programs to aid the poor was "a fruit of the Reformation." Catholic scholars contest this notion, saying that the problems were due to the relative overpopulation of Europe, general economic conditions, and defective organization. What the Reformation had done, they contend, was to destroy "the monasteries and ecclesiastical foundations, which were for the most part applied to secular objects," such as poor-relief. The properties that had supported such efforts were now in private hands, and a series of terrible wars further aggravated the general misery. As a result,

Poverty, begging, crime, want, and public insecurity grew unchecked. The poor-regulations of the towns were almost entirely ineffectual, and the state governments entered on a warfare with poverty and vagabondage by inflicting severe punishments, and, in England and France, the penalty of death. ("Care of the Poor . . .," 2008)

<sup>13</sup> See the extensive discussion in "Suppression of the Monasteries . . .," 2008.

<sup>14</sup> Reformation leaders condemned ecclesiastical relief of the poor as "unmethodical, uncritical, and without organization, and consequently fosters begging and exercises a harmful influence" ("Care of the Poor . . .," 2008). Poor-relief in England was secularized in 1536; this provision was followed in 1575 by the legal institution of poorhouses. In 1601, Parliament passed the Poor Law, which remained in effect until the reforms of 1834. It has been estimated that, between 1500 and 1650, upwards of 60 percent of the population were "unable to support themselves" (Beier, 1983, p. 10).

royal charter; however, when the size of the army increased, captains were authorized to recruit their own surgeons. The surgeons were exempt from being conscripted and were treated as officers. Their meager pay proved to be problematic; eventually, each regiment of ten companies was authorized higher pay for two surgeons augmented by assistants to care for the troops. This new regimental medical staff would eventually lead to the establishment of regimental hospitals. The cost of medical care, however, continued to be borne by the surgeons and the soldiers themselves as a garnishment of their wages.<sup>15</sup>

Despite a growing awareness of the need for transportation to move the wounded from the battlefield and provide for their care when the medical services assigned to the regiments were on the move, nothing was done during these years to address this critical evacuation problem. This resulted not only in a greater loss of life than was necessary, but it depleted the ranks of fighting men as they carried their comrades to safety. The issue was not really addressed until the Crimean War of 1854. Lieutenant General Sir Neil Cantlie, a later Director General of the Army Medical Service, said this:

Such utter disregard to the provision of special bearers for the wounded compelled them to remain helpless on the field of battle until the action was over, and it is impossible to calculate the sacrifice of life and limb which resulted from the neglect of these wretched victims of war. (Cantlie, 1974b, p. 19)

### **Disabled Veterans in Elizabethan England**

The 1590s were a very difficult period in England, particularly for returning veterans of the Twenty Years War with Spain. Upwards of 80,000 men returned home to face unemployment, another outbreak of the plague, high prices, food shortages, heavy taxation, and the “associated problems [of] poverty, vagrancy and the threat of public disorder” (Power, 1985, p. 372). Moreover, with their war-honed skills in arms, these men posed a threat that could not be ignored.

In 1594, the Privy Council, acting in the name of Queen Elizabeth I, tried to deal with the pressing problems of sick, wounded, and disabled soldiers. Soldiers who were recuperating from illness or wounds and who were expected to return to duty were maintained on the muster and received their full pay. Military hospitals were established, replacing the system of private houses that had previously been used, as a way to

encourage and comfort the poor soldiers, who were dying in the streets for want of proper medical attention. If they were better looked after [it was argued], many would be restored to health, which would not only enable them to fight another

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<sup>15</sup> According to Cantlie, 1974b, p. 18:

The tight fisted Treasury had no intention of providing medicines for the troops while . . . [a] source of revenue was at hand. So the surgeon was made to buy his drugs and dressings locally as best he might. . . . On the Captain lay the responsibility that his surgeon . . . [had the] necessary stuffs, . . . and he had to provide for their transportation. So the wretched soldier was by this “regard” indirectly paying for his own medicines.

day, but would encourage their fellows to risk their lives more willingly. (Cruikshank, 1966, p. 180).

In providing these hospitals however, the government “hire[d] suitable buildings, . . . had them converted, . . . [and provided] bedding, . . . but the running expenses were . . . met from a levy of man’s pay on each company” (Cruikshank, 1966, p. 181).

The Privy Council tried to assign responsibility for the plight of the permanently disabled directly to local authorities. When both civil and ecclesiastical authorities questioned the legitimacy of the council’s orders, Parliament gave disabled soldiers a legal claim to assistance under provisions of the Acte for the Relief of Souldiours of 1593 (Gruber-von-Arni, 2001, pp. 79–81).

This act, which became the foundation for the military disability system in the American colonies, provided a rationale for pensions and a mechanism for providing state support for a decentralized system of local care.<sup>16</sup> The rationale included the twin arguments of *compassion* and *practicality*:

Forasmuch as it is agreeable with Christian Charity Policy and the Honor of our Nation, that such as have . . . adventure[d] their lives, los[t] their limbs or disable[d] their bodies in the defense and service of her Majesty and the State, should at their return be relieved and rewarded, to the end that they may reap the Fruit of their good deserving, and others may be encouraged to perform the like Endeavors. (An Acte for the Relief of Souldiours, 1593; spelling modernized)

Parliament’s unwilling agents in carrying out the act were local justices of peace, church wardens, and constables. Parliament legislated that

every Parish within this Realm of England and Wales shall . . . pay weekly . . . a sum of money toward the Relief of sick hurt and maimed Soldiers and Mariners [sailors] . . . [who have lost] their Limbs or disable[d] their Bodies, having been pressed [drafted] and in pay for her Majesty’s Service. (An Acte for the Relief of Souldiours, 1593; spelling modernized)

While Parliament provided that local officials could seize and sell the “goods or chattel of the parties refusing or neglecting” to pay the stipulated tax (An Acte for the Relief of Souldiours, 1593), the funds raised were never adequate for the needs. Further legislation in 1592, 1597, and 1601 reinforced the responsibility of church wardens and other parish officials to tend to the poor and vagrants and, particularly, “disabled soldiers and seamen who were unfit for further military service and unable to maintain

<sup>16</sup> The 1718 statute passed by the General Assembly of New Hampshire provided the following rationale for the care of wounded soldiers: “For the better encouragement of soldiers to adventure their persons against the enemy” (Adkins, 1967, p. 22).



a livelihood for themselves” (Gruber-von-Arni, 2001, p. 14).<sup>17</sup> The struggle between the national and local governments continued throughout the early part of the 17th century. Local justices of the peace refused to use the authority they had been given to raise taxes. While the national law specified pensions for life, local officials instead chose to restrict pensions by imposing a need test.

While the 1601 law had theoretically made life pensions a right, the discrepancies between the national law and local practice were finally resolved in favor of local practices. In 1647, Parliament formally introduced a need test, and the ability to work became the only basis for determining eligibility for pensions. An alternative also arose, which may have helped a select few. Starting in 1654, the government allowed some wounded and sick soldiers to remain on the muster rolls, which enabled them to continue to draw their pay. Some units went further and even kept the names of deceased officers and men on their rolls to enable their widows to continue to receive payments.<sup>18</sup>

The problem of disabled seamen was treated separately from that of disabled soldiers. In 1590, seamen disabled in the war against Spain petitioned Queen Elizabeth for relief and maintenance, and a mutual fund was established, reminiscent of the burial societies of the Romans. Funds were held in a box at Chatham, and the fund itself became known as the Chatham Chest. The fund was originally financed by members’ contributions, which were deducted from their pay, along with funds later provided by the government. Pensions were granted on a fixed scale, with different rates for the loss of a limb or for the loss of both arms.<sup>19</sup>

### The English Civil Wars

Some consider the English Civil Wars to have been “more pronounced and significant than any other conflict in British history, including the two World Wars” (Gruber-von-Arni, 2001, p. 1). Estimates are that, proportionally, British war-related deaths for the Civil Wars, which include the wars in Ireland, were almost four times greater than

<sup>17</sup> In 1599, a hospital was established in Buckinghamshire especially for the “maimed unmarried soldiers.” It housed, however, only 36 men (Cruikshank, 1966, p. 182).

<sup>18</sup> The English system contrasts sharply with the way other countries provided for their armies. As early as 1492, Spain provided casualties free medical care in permanent military hospitals staffed with nurses from religious orders. The king of Sweden believed that the care of casualties should not be left to individual units. He standardized medical care throughout his army and “regarded the provision of adequate medical facilities as an enhancement of morale and a recruiting incentive” (Gruber-von-Arni, 2001, pp. 5–6).

<sup>19</sup> The main credit for founding the Chatham Chest probably belongs to Charles Howard, Lord Howard of Effingham (1536–1624), the Lord High Admiral of England. Annual pensions were granted on a fixed scale in amounts ranging from £6.13s.4d for the loss of a limb to £15 for the loss of both arms. In addition, each pensioner was granted an immediate lump sum, generally equal to one year’s pension, called “smart money.” During its long life, the chest experienced many difficulties, which were financially serious by 1660. From about 1673 on, the government tacitly agreed to meet the chest’s expenses beyond its income each year. The number of pensioners drawing on the chest increased substantially during the Napoleonic Wars, rising to 5,205 in 1802. Following an act of Parliament in 1803, the Chatham Chest merged with Greenwich Hospital.

those in World War I and almost 18 times greater than those in World War II (Gruber-von-Arni, 2001, p. 10).<sup>20</sup> The number of wounded was estimated at over 90,000 for England and Wales; 30,000 for Scotland; and between 80,000 and 100,000 for Ireland. In addition,

in each of the three kingdoms, . . . there were tens of thousands of men who for years after the wars bore in their bodies tangible reminders of what they had undergone, whether it was a limp, a lingering ache, deafness, disfigurement, or a missing arm leg hand or eye. (Gentles, 2007, p. 437)

From 1642 to 1646, Royalist forces made no central provision for the care of sick or wounded soldiers. Cantlie tells us that, after their defeat at the second battle at Newbury in 1644, Royalist wounded were left behind, in hopes that they would receive “humane treatment” (Cantlie, 1974b, p. 29) by the Roundheads. In contrast, the New Model Army of the Commonwealth included provisions for a physician general, a surgeon general, and an apothecary general.<sup>21</sup> It followed the standard of requiring one surgeon for each company, which the guilds were required to provide if there were not enough volunteers. Parliament provided medicines that were for internal use, but the surgeons were still required to provide external medicines, such as liniments and ointments and the dressings for the wounds, the cost of which was ultimately borne by the troops. Given the number of casualties, the resources of the regimental hospitals were soon overtaxed, and Parliament soon adopted a very progressive approach toward its sick and wounded soldiers, supporting them with “national funds rather than from the proceeds of local taxation in counties” (Glasson, 1918, p. 11). At the start of the conflict, many wounded were given financial assistance and sent home. As the conflict continued and as recruitment became more difficult, the sick and wounded were kept with the army, and arrangements were made for their care. In London, a central facility was established at the Savoy Hospital in 1644, with Parliament paying its physicians and surgeons through its Committee for Sick and Maimed Soldiers (and later the Hospital’s Committee) (Gruber-von-Arni, 2001, p. 48). To accommodate the mounting casualties of the Civil War, additional hospitals were opened in London in 1648; two were established in Dublin in 1649, and one in Scotland in 1654 (see Cantlie,

<sup>20</sup> Gentles, 2007, p. 437, has lower numbers. He put the death rate due to the civil wars at 7 percent of the population of England, Scotland, and Ireland. The military death rate in World War I was 1.6 percent of the population; in World War II, it was 0.7 percent of the population. The death rate in Germany during the Thirty Years War is estimated to have been between 15 and 20 percent.

<sup>21</sup> Cantlie, 1974b, p. 25, notes that this was the first time these titles were used, although they were not formally made part of the Headquarters Staff until 1691. In these instances, the use of the term *general* does not signify personal rank but indicates that the individual held “superior authority in their particular area” (Cantlie, 1974b, p. 33). The king selected the *physician general* from civil life, and he was mainly concerned with the selection of physicians and the treatment of diseases. The *surgeon general* usually had military experience rising from the ranks of regimental surgeons. They served at the pleasure of the king or, with no formal retirement, until they died.



1974b, p. 26). As the Civil War progressed and with prodding from demonstrators outside the Commons, Parliament finally addressed the financial needs of wives and widows in 1642 and again in 1646. Having finally recognized an obligation to provide for the sick and widows, Parliament, as it had on previous occasions, attempted to push the burden of caring for sick and wounded soldiers and their widows onto local communities. Finally, in 1660, with the Protectorate ending and the Restoration imminent, Parliament directed that “all remaining patients, pensioners, widows and orphans . . . be paid 12 weeks’ pension and discharged with a certificate recommending them to the Justice of the Peace of their individual home counties for ongoing support” (Gruber-von-Arni, 2001, p. 86).

### The Restoration

Charles II was restored to the throne in 1660, and with him came the establishment of a “standing” army, along the lines of the disbanded “model” army. On top of the medical establishment was a triumvirate consisting of the physician general, surgeon general, and the apothecary general. In peacetime, the army’s medical establishment consisted of the regimental surgeons and their mates. The regimental surgeons’ commissions were either purchased or “obtained by influence” (Cantlie, 1974b, p. 33). They were drawn from the lower class of barber-surgeons and could not aspire to the higher ranks of physicians because of their lack of education. Their pay was never adequate to fill their ranks, and various schemes were developed to augment their compensation. In some regiments, they were allowed to “hold a double commission by purchasing an ensign’s commission.”<sup>22</sup> Often the Company of Barber Surgeons of London was ordered to draft members of their guild to meet the needs of the army. Surgeon’s mates were given the rank of warrant officers, the best of whom had apprenticed to a medical practitioner or surgeon and attended lectures and instruction at one of the hospitals in London.

During wartime, military hospitals were established with staffs of physicians recruited from civilians with little or no military experience. The best military surgeons were selected to serve in these hospitals for the duration of the campaign. At the end of the war, they returned to the ranks of regimental surgeons, and the newly hired physicians were “made redundant, . . . and either had to resign from the service altogether or were placed on half pay” (Cantlie, 1974b, p. 40).

As for care for the maimed and wounded who had fought under the banner of the Commonwealth, the new Parliament rescinded pensions for former “Roundheads”—soldiers who had fought against the crown—and voted in pensions for maimed Royalist soldiers, again relying on local administration and taxation. It took another 20

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<sup>22</sup> Cantlie, 1974b, p. 34, notes: “This authority of holding a double commission continued until it was cancelled by regulation in the year 1783. Unfortunately, all these various expedients to augment their income only served to encourage the Treasury to withhold a proper living wage.”

years, however, to fully address the needs of those who fought for the Crown. In 1681, royal hospitals were established at Kilmainham in Dublin, Ireland, and at Chelsea in London. A royal hospital for sailors was established in Greenwich in 1689. These hospitals were modeled after the French *Les Invalides*, but like the Chatham Chest, they were financed from deductions from the pay of soldiers and sailors.<sup>23</sup> Originally designed to house about 500, Chelsea proved inadequate, and those awaiting vacancies were given a stipend while they waited. Following the French model, these “in-pensioners” were organized into invalid companies and were “liable to special service in time of war” (McMurtrie, 1919b, p. 22).

The rise of the royal hospitals at Chelsea and Greenwich was the final nationalization of the care of disabled veterans. It put an end to the county scheme but not necessarily to the benefit of the disabled. Rather than being maintained by tax revenues, the hospitals were royal charities paid for principally by deductions from soldiers’ and sailors’ own pay and were later assigned a proportion of the “spoils of war” and fines levied on the soldiers for minor infractions of the rules (Cantlie, 1974b, p. 62).<sup>24</sup> Life at the hospitals was also highly regimented, with veterans being treated more like inmates than honored residents.<sup>25</sup>

In 1685, disability pensions were finally established, with one year’s pay for the loss of an eye or limb, “with bounties for other wounds in proportion. For those soldiers who were temporarily disabled by wounds a daily pension was paid . . . [which was later] extended to all soldiers of over twenty years’ service or those who had been rendered unfit” (Cantlie, 1974b, p. 42).

### **Great Britain’s Army from the Glorious Revolution to the Napoleonic Wars**

In 1685, Charles II, a Protestant, died leaving the throne to his Catholic brother, James II. His reign lasted only three years before Parliament deposed him, offering the throne to his daughter and her husband, William of Orange. This was, however, to be a different type of monarchy. William and Mary had agreed to a bill of rights—An Act Declaring the Rights and Liberties of the Subject and Settling the Succession of the

<sup>23</sup> The same system is used today to fund the Armed Forces Retirement Home in the United States. Since the home’s establishment almost 150 years ago, service members have contributed to a permanent trust fund to support the home. In the beginning, soldiers on the active duty contributed via payroll deduction, “25 cents, when the average pay of a soldier was \$7 a month. Fines and forfeitures from the armed forces and the monthly withholding have provided the principal support for the Home throughout its history” (Armed Forces Retirement Home, 2008).

<sup>24</sup> The U.S. Navy also used assignment of fines as a means of financing the Navy Home, resulting in financial difficulties for the home as the Navy’s levying of fines fell out of favor.

<sup>25</sup> Hudson, 2000, p. 137, notes that “Chelsea and Greenwich . . . continued the process, already begun under the county scheme, of ever greater regulation of veterans’ bodies.” An 1865 review by the U.S. Sanitary Commission found that Chelsea and Greenwich Hospitals “have long had nothing in their favor but national pride, and the necessity of having some place where a small percentage of homeless and friendless incurables could be sent to die, or be taken care of through their helpless lives” (Bellows, 1865, p. 5).

Crown—that passed Parliament on December 16, 1689, as the condition of gaining the throne. This act limited the powers of the monarch, including the right to have his own army. Henceforth, only Parliament could raise an army.<sup>26</sup> It also soon brought England into open conflict with France, which would sporadically continue until the defeat of Napoleon in 1815.<sup>27</sup>

Garrison, 1922, p. 137, notes that military medicine of the day (the late 1600s) had become

a definite function of government . . . [with] limited periods of voluntary enlistment[s], regular medical examinations of recruits, regular salaries for officers, government quarters for troops, regular uniforms, a common daily ration, the military regulation of army hospitals, . . . periodicals devoted to military medicine, and regular schools for military medicine.

But conditions for the British army were not so rosy.

Expenditures for the army were never very popular, especially so for medical services. Low wages meant that soldiers were recruited or impressed from the “dregs of the population” (Howell, 1914, p. 320). Soldiers were even made to pay for their own medical care. The British Army Articles of War of the time included a provision that “one day’s pay be deducted annually for hospital” (Garrison, 1922, p. 141).<sup>28</sup> This was not changed until 1783, when the government agreed to provide each regimental surgeon with funds for the purchase of medicines from a standard formulary (see Cantlie, 1974b, pp. 104–108). When, in 1722, Parliament finally approved a peacetime army of 18,000 men, it included only about 170 “medical officers, staff regimental surgeons, garrison surgeons and physicians and surgeons’ mates” (Howell, 1914, p. 321). Barracks were not generally provided because their construction was associated with a standing army. Units were routinely sent out with only their regimental surgeons and “army surgeons saw little service in the field” (Howell, 1914, p. 324).

We have an intimate look at the British army in the field during the War of the Austrian Succession, thanks to the work of Major H. A. L. Howell, published in 1914.

<sup>26</sup> Parliament had financial control and wrote the disciplinary code, but the Crown

Still maintained supremacy over the command and organization of the Army . . . But . . . the exact relationship between the Commander-in Chief and the Secretary of State for War, who both shared responsibility for the Army . . . [was] never defined clearly, with the result that Army organization became thoroughly confused and ineffective. (Blanco, 1965, p. 124)

<sup>27</sup> The “Grand Alliance,” as it was first known, saw England at war with France: the War of the League of Augsburg (1688–1697), the War of Spanish Succession (1701–1713), the War of Austrian Succession (1741–1748), the Seven Years War (1756–1763)—known in America as the French and Indian War—and the wars of the French Revolution and Empire (1793–1815).

<sup>28</sup> According to Cantlie, 1974b, p. 61: “In peacetime, medicines and dressings were paid for by the regimental surgeons out of the medicine money stopped weekly from the pay . . . [of] the men of the regiment. . . . In war-time medicines were supplied by the government.”

He tells us that the following description was true of the army that fought the earlier campaign of the War of Spanish Succession and is a precursor of the medical arrangements for both sides during the American Revolution:

Each regiment had its own surgeon and surgeon's mate. Some regiments had two mates. When in containments some building was taken over and converted into a Regimental Hospital. At such time the regimental sick were treated therein, and only serious cases or those not likely to become fit again for some time were transferred to other hospitals. In addition, there were large . . . General Hospitals, in the larger towns and at the base, to which the more serious cases were sent from the regiments. Those hospitals had separate staff of physicians, surgeons, apothecaries, surgeons' mates, purveyors and nurses. (Howell, 1914, p. 332)

The facilities and staff of the general hospital and the regimental hospital were far from equivalent. In peacetime, general hospitals were built in central locations in the British Isles. In time of war, as the army increased in size and deployed overseas, the general hospitals provided the staff for new general hospitals that accompanied the troops to large garrison towns. These, however, were not permanent facilities but were established at the start of each campaign and closed at the conclusion of each campaign.<sup>29</sup> Moreover, as the size of the force increased, medical personnel of dubious quality were procured from the civilian population.

Physicians at the general hospitals were usually the elite, having been trained at Oxford or Cambridge, but were generally without military experience. Kempthorne, 1930, p. 66, suggests that, as a result, "the hospitals became the refuge of malingerers, the mortality was high, and the most scandalous abuses prevailed." The lesser staff, including the surgeons, apothecaries, mates, and nurses, had less training, was less qualified, and was accordingly paid less. In the British hospitals of the 18th century, the care provided by female attendants was professionalized.<sup>30</sup> Kopperman, 1979, p. 438, notes that the "unit of trained nurses, often attached to a hospital before it embarked from England, were usually kept intact throughout a campaign and sometimes for several years."

<sup>29</sup> Kempthorne, 1930, p. 430, notes that "new structures were rarely built. . . . Generally the most that the hospital staff could hope for was a large unoccupied building or two to use as a base. . . . More often than not, the army had to rent, or appropriate a number of small houses."

<sup>30</sup> According to Kempthorne, 1930, p. 436: "Nursing as a career [did not] burst full grown from the head of Florence Nightingale. In point of fact, already by 1750 . . . a number of women were making a career of army nursing." A report from 1794 noted that the head nurse was "generally responsible to see to the patient's comfort." Accordingly, she went around

all the wards of the hospital at least twice a day, morning and evening; to see that the nurses kept their wards clean; that they behave themselves soberly and regularly, and give due attention to their patients, . . . and if she finds anything amiss to report the same to the physician, surgeon, or apothecary, of the hospital. (as quoted in Kopperman, 1979, p. 437)

Also see Sarnecky, 1999, p. 3.

The training of the medical staff was always a concern, particularly as the army expanded. At the start of the War of Austrian Succession (1741), the British Army numbered 29,000; by 1747, the army had grown to 86,000 men (see Howell, 1914, pp. 328, 461), and with it, the demand for more medical staff increased. To accommodate this new demand, the Medical Board in London lowered standards. By one account of the day, “surgeons were appointed without having a single day in a regiment. They were taken . . . to learn their profession at the expense and inconvenience . . . of the unfortunate soldiers committed to their care.”<sup>31</sup> While there was no formal medical training, distinguished physicians and surgeons published books that provided practical guides.<sup>32</sup> Their advice, however, while reflecting the standards of the day, generally did more harm than good.

The medical officers assigned to each regiment generally apprenticed with a physician or surgeon, rather than having a formal education, and commensurately received low pay. It was alleged that they often dipped into the funds that were given them to purchase medicine and supplies to supplement their low pay.<sup>33</sup> The War Office was opposed to letting the regimental medical officers advance without centrally administered examinations, which restricted the movement between the general and regimental hospital systems.<sup>34</sup> In 1756, the post of Inspector of Regimental Infirmaries was established to ensure that professional standards were maintained, that money collected was properly accounted for, and that patients received proper care. A army officer with full—field marshal or above—rank filled this position. The prominence of the general hospital over the system of care at the regimental level and the competition between the two were exported to the colonies and can be seen during the siege of Boston in 1775, when General George Washington tried to install a general hospital over the objections of regimental surgeons.

On the march, the army sent out quartermasters to go “ahead of the troops to lay out the camping grounds and build latrines before the troops arrived” (Howell, 1914, p. 456). They commandeered everything, including firewood, wagons, straw,

<sup>31</sup> George James Guthrie, a British surgeon, as quoted in Blanco, 1974, p. 5.

<sup>32</sup> For example, Donald Monroe’s *Observations on the Means of Protecting the Health of Soldiers* (1790), John Pringle’s *Observations on Disease in the Army* (1752), and John Ranb’s *Methods of Treating Gunshot Wounds* (1744) (as cited in Blanco, 1974, p. 6).

<sup>33</sup> Recall that these funds came from the soldiers themselves as “stoppages of soldier’s pay . . . to be used in purchasing medicine and certain other supplies” (Kempthorne, 1930, p. 445).

<sup>34</sup> Kopperman, 1979, pp. 447–452, notes

For its own reasons, the officer elite of the army allowed medical policy to be guided by hospital staff. Little was done . . . to upgrade the regimental services. . . . The commanders-in-chief uniformly considered the general hospital to be the most important element in the medical service. . . . [Since] the Secretaries of War and at least some of their chief medical advisors stressed economy, [and] made cost-cutting a top priority, there was little chance that the medical services, particularly on the regimental level, could be significantly upgraded.

and forage. They demanded billets for the troops and took “quarters for the staff.” Each battalion was authorized one wagon “to carry the weak men, but not any baggage.”<sup>35</sup>

Once the army engaged in battle, medical care centered on the “flying hospitals,”<sup>36</sup> which Howell describes this way:

During the actual fighting the wounded were attended on the field by regimental surgeons and their mates, and collected in houses and villages near the battlefield or placed in a few tents carried for the purpose and pitched in the rear of the regiment. Following close behind the advancing troops was another kind of hospital . . . the Flying Hospital. The Flying Hospital had its own tents and transport, and medical, nursing, and transport personnel. When first instituted, each accommodated 200 sick or wounded men, but, later, we find them on occasion admitting more than this number. It took over the sick and wounded from the regiments, and when the army again advanced transferred its patients to the general hospitals, one of which was always open twelve to forty miles behind the troops in the nearest large town on the line of communications. (Howell, 1914, p. 333).

Conditions along this medical chain or echelon were, to say the least, variable and uncertain. The flying hospitals and even the general hospitals were subject to attack during the battle, and several fell into enemy hands during the War of Austrian Succession. Early in the war, the policy was to evacuate the sick as soon as possible to the general hospitals, which “led to great overcrowding and the rapid spread of epidemic disease” (Howell, 1914, p. 460). Later in the war, the regiments expanded their own hospitals, which resulted in better outcomes. However, in at least one instance, the regimental hospital crowded the sick into the “few cottages available and an epidemic of typhus broke out” (Howell, 1914, p. 461). Moreover, transportation of the wounded from the battlefield was always a problem, even for the winning side. For example, at the Battle of Dettingen (June 16, 1743), which the allies won, they left their wounded on the field, with a great loss of life.<sup>37</sup>

<sup>35</sup> From the Duke of Cumberland’s General Order of April 23, 1745, as quoted in Howell, 1914, p. 455.

<sup>36</sup> The first such hospitals were established by William III in 1689 during the campaign in Ireland. The staff included female nurses, or “tenders,” recruited from civilian institutions and, eventually, male orderlies to do the heavy work. The wives of soldiers were employed to do the washing, cooking, and feeding of the sick. The design of the hospital was flexible but generally provided 300 beds. Originally, bedrolls were carried, but later, wooden bedsteads were introduced “for the greater comfort of the patients” (Cantlie, 1974b, p. 49). Tentage and general ward supplies, such as bedpans and urinals, were carried in the hospital’s own wagons.

<sup>37</sup> Eventually, the French “removed the wounded of both armies to the French hospital, where the English had the greatest care and humanity shown them by the French, but were detained as prisoners of war. The desertion of the sick and wounded by the Allies was severely censured” (Howell, 1914, p. 330).



On July 28, 1743, the allies and France concluded a treaty to regulate the care of the the wounded that foreshadows the Geneva Conventions of the next century.<sup>38</sup> The treaty provided that

care shall be taken of the wounded on both sides; that their medicines and food shall be paid for; . . . that it shall be allowed to send them surgeons and their servants; . . . that the sick on both sides, shall not be made prisoners; that they may remain with safety in their hospitals, . . . so likewise shall all . . . chaplains, physicians, apothecaries, infirmarians, waiters or other persons proper to attend the sick . . . shall not be liable to be made prisoners. (Howell, 1914, pp. 333–334)

The British used the system of general hospitals and regimental care during the Seven Years War (1754–1763), known as the French and Indian War in America. General hospitals were established at main bases, such as that at Albany, New York, while smaller general hospitals moved with the troops. That said, by one account, the general hospital at Albany was “no better than a shed,”<sup>39</sup> overcrowded and prone to epidemics, with dysentery, fever, and typhus being the most virulent (see Cantlie, 1974b, p. 129). The British hospitals during the Revolution followed the pattern established during the French and Indian War (see Cantlie, 1974b, pp. 139–169). Transportation of the sick and wounded remained a problem.

In the years following the American Revolution, a number of reforms were initiated under the leadership of the new Army Medical Board, which was made up of the physician general, the surgeon general, and the inspector of regimental infirmaries. The reforms were generally designed to improve the professionalism of the regimental surgeons and mates. Actions were also taken to establish general hospitals in Britain, especially to care for invalided soldiers.<sup>40</sup> Efforts to improve the qualifications of medical personnel were frustrated, however, by the poor rates of pay: “No doctor, unless he was attracted by the adventure and comradeship of a soldier’s life would think of taking up a commission when he would make four times that amount in civilian life” (Cantlie, 1974b, p. 172).

The convoluted division of responsibilities and “personal animosity” between the three members of the board and abuses of a system that allowed a degree of professional judgment to affect the selection of promotion of personnel eventually led to the appointment of the Commission of Military Inquiry. Aside from addressing the administrative morass, “it was soon obvious that the main objective of the Commis-

<sup>38</sup> The formal title was, “The Treaty and Agreement for the Sick, Wounded, and Prisoners of War of the Auxiliary Troops of his Most Christian Majesty, and for those of the Allies” (Howell, 1914, p. 333).

<sup>39</sup> According to the Head Nurse or Matron of the hospital, as quoted in Kopperman, 1979, p. 430.

<sup>40</sup> Cantlie, 1974b, p. 172, tells us “the establishment of general hospitals at home had at last been forced on an unwilling Treasury by public opinion which had been scandalized by the hardships suffered by the invalids arriving at the ports from America.”

sion was to seek every excuse to reduce expenditures rather than promote efficiency” (Cantlie, 1974b, p. 186). In 1809, the Medical Board was abolished in favor of the establishment of the Medical Department, under a new director general. Despite its name, this was a civilian institution and did not come under the authority of the War Office until the Crimean War. The general hospitals were closed in favor of the regimental hospitals, promotions were to be made on the basis of seniority, and staff surgeons were required to buy their own surgical instruments, just as regimental surgeons were required to do. These moves left the army ill prepared for the coming campaign. Cantlie, 1974b, p. 196, argues that, on the eve of the war with France, the

decision to close the general hospitals placed an impossible burden on the regimental officers and their hospitals, for they were now compelled to accommodate not only their own sick but the wounded and invalids arriving from overseas. . . . When thousands of typhus cases poured into Portsmouth from Spain [later that year] . . . there was no hospital to put them in.

### Care for Veterans

Care of invalided soldiers had been addressed with the pension reforms introduced by Prime Minister William Pitt in 1754, which included pensions for those “invalided, disabled, or discharged after from fourteen to twenty-one years of service” (McMurtrie, 1919b, p. 115), but these reforms proved to be inadequate. At the time of the American Revolution, the “out-pensioners” in Britain numbered almost 14,000. In wartime, companies of invalids were formed from the pensioners for light duty. Provisions for war widows and orphans were less direct. In some companies, deceased officers were carried on the rolls, with their pay “taken for the widows’ fund,” and children received commissions in units their fathers had served (Glasson, 1918, p. 13). It eventually fell to concerned citizens to augment the available medical services that the government provided veterans. As distinct from the purely religious hospices operated by the charitable orders of the past, these civilian organizations were essentially secular, even as they often saw their mission as part of “the Christian duty of a people to minister to the comfort and health of men engaged in so perilous a service, leaving their homes and families and kindred to encounter sickness, wounds, and death, for the sake of country and liberty” (Forman, 1864, p. 4).

### The Napoleonic Wars: Medical Care Under Wellington

The medical care the soldiers of Wellington’s army received during the Napoleonic Wars (1809–1815) was much as it had been during the 18th century. It consisted of two echelons of care: the regimental system integrated into the army and the flying hospitals and general hospital system managed from London. During the first years of the Peninsular War (1808–1814) in Spain and Portugal, the animosity between the two systems continued. Kempthorne notes that Sir Arthur Wellesley, later the first Duke of Wellington, complained:



with considerable justice Medical Officers . . . who had proven their zeal and ability in acting staff appointments, and had been recommended . . . for substantive promotion, were passed over in favor of others who had secured the patronage of the [Medical] Board. (Kempthorne, 1930, p. 66)

Moreover, the medical staff (and other officers) that had been promoted on the basis of quality was often “badly treated [because while] they held the King’s commission, . . . [it was] without the social position usually attached to it” (Kempthorne, 1930, p. 67). At the end of a war, the army was “broken up,” and almost all the senior medical officers were dismissed and put on a half-pay retainer, subject to recall.

When Napoleon returned from Elba in 1815, the allies mobilized to oppose him. The speed of the campaign prevented the medical services from being fully mobilized. “The expert civilian surgical help arrived too late and was haphazardly organized” (Crumplin, 1988, p. 42). Slightly more than one-half of the battalions engaged at Waterloo—22 of the 40 engaged—had their full complements of regimental surgeons; the rest went into battle with fewer than the required medical personnel (see Crumplin, 1988, p. 38). As a result, the almost 7,000 casualties “overcame the quota of experienced medical officers available. Efficient evacuation was difficult and painful. Many soldiers perished for lack of good basic first aid, excessive venesection—bleeding—and ultimate sepsis” (Crumplin, 1988, p. 42).

### **From Waterloo to the Crimean War: The Age of Reform Misses the British Army**

The first half of the 19th century was an age of reform in Britain, centered on the Reform Act of 1832. One institution that resisted reform, however, was the army. While Parliament had taken financial control of the army in 1688, the Crown still maintained control of its command and organizational structure. Blanco, 1965, p. 125, argues: “The Army was deliberately ignored by the mainstream of the reform movement and purposely left under the control of the Crown because it was considered to be a lesser institution.” As a result, the conservative view of the Duke of Wellington guided the Army until his death in 1852, on the eve of the Crimean War, making reform problematic. For example, Strachan, 1984, p. 15, notes the results of the 1840 commission on promotion, chaired by Wellington, as bringing forth “a mouse of the least possible dimensions.” Nevertheless, some of the most noteworthy reforms made even before the duke’s death were in the Army Medical Department, which was partially under the aegis of a parliamentary minister, the Secretary of War (see Strachan, 1984, p. 10).

In Wellington’s army, enlisted men were the “scum of the earth,”<sup>41</sup> and “the officer corps . . . represented the elite of society who found in the Army a temporary haven

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<sup>41</sup> Coss, 2010, pp. 29–49, calls this an “unjust reputation” in his chapter on the “The Genesis of the ‘Scum of the Earth’ Myth.” His analysis of the demographic record shows that, “rather than being a despicable rogue, . . . the typical British army recruit . . . was most likely a young man driven to enlist through a combination of demo-

in which to continue their aristocratic pursuits” (Blanco, 1965, p. 128). The disdain that the officer class had for their enlisted men can be seen by the fact that, after their initial provision of a basic uniform, they had to pay for new clothing out of their meager pay. If an enlisted man was sent to the hospital, his pay was deducted “in order to compensate the Exchequer for the medical expenses” (Blanco, 1965, p. 127). Efforts to reduce the large pension bill that resulted from the demobilization of the army after Waterloo only added to the plight of the older soldiers. In 1829, a board was established to “define closely the nature of disabilities qualifying for a pension” (Strachan, 1984, p. 68). After 21 years of service, a soldier could receive a minimal pension

if discharged at his own request. . . . Partially disabled men of less service . . . [received pensions] for a period of up to three years to enable them to secure a civilian job. . . . If the veteran of twenty-one years’ service left on the minimum pension, pauperdom was his likely lot. (Strachan, 1984, pp. 68–69)

With the establishment of limited enlistments in 1847,<sup>42</sup> the basic pension was increased to ensure that longer service was still attractive.

The conservative influence of the Duke of Wellington and the miserliness of the Exchequer notwithstanding, the years of peace between Waterloo and the Crimean War saw many reforms in the Army Medical Department. These were initiated by Dr. James McGregor during his 38 years as Director General and included the commissioning of physicians from a wider range of British universities, making promotions on the basis of “knowledge and ability rather than seniority or patronage” (Cantlie, 1974b, p. 431), establishing fixed time-in-grade requirements for promotion, increasing pay, and recognizing the military nature of medical service with the awarding of military decorations to medical officers. He established a system of medical reporting that provided the data for a study of the mortality of soldiers living in military barracks, which was higher than the mortality rate for the general population.<sup>43</sup> The data were used to

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graphic, technological, and political forces that melded to create an untenable employment situation. Unable to find work or even feed himself, the volunteer chose the army out of need” (Coss, 2010, p. 85).

<sup>42</sup> The introduction of limited enlistments—ten years of service—in 1847 was to

Equate military service with other working-class occupations, to remove the implications of less liberty implicit in an indefinite period of service, and it was thus a manifestation of the desire to attract a better class of recruits. It was an acknowledgement of the failure to draw in a higher standard of soldier by other means. (Strachan, 1984, p. 70)

The perceived benefits were not forthcoming, and an army enlistment act of 1867 provided for a 21 year enlistment. This lasted, however, for only three years, when the “1870 short-service act stipulated a seven-year period, and subsequent service in the reserve” (Strachan, 1984, p. 74).

<sup>43</sup> Cantlie, 1974b, pp. 439–440, notes:

In the early years of the 19th century the mortality rate amongst the troops at home was between 15 and 17 per 1,000 compared with a rate in the civil population of 10 per 1,000. Barrack hygiene and ventilation were defective and with soldiers packed into overcrowded barracks contagious diseases such as typhus and infectious diseases such as lung tuberculosis were common. . . . The admission rate [to hospitals] was around 1,000 troops

convince the niggardly Treasury “that money spent in bettering the soldiers’ health would save expense in soldiers’ lives” (Cantlie, 1974b, p. 443). He also set up a medical museum with anthropological and pathological sections, as well as a medical library.

However, reflecting McGregor’s support for the decentralized regimental system, the army had only one general hospital in England during this period, and it was to care for the 3,000 or so invalids that arrived each year from overseas garrisons. Strachan, 1984, p. 244, notes that while this

produced an admirable system for the army’s peacetime duties, . . . [it also] create[d] a body of officers totally unfamiliar with the administration of general hospitals. In particular it was at this higher level that the transport of the sick and the supply of medicines operated.

Given the bifurcation between the Medical Department and the Ordnance Department for the provision of medical supplies, “McGregor’s carefully constructed edifice came crashing down in the winter of 1854–5” in the Crimea (Strachan, 1984, p. 244).

### **The Crimean War: Medical Services and the Intervention of Nongovernmental Organizations in the Care of Soldiers and Veterans**

At the start of the Crimean War (1853–1856), the British Army employed only 225 medical officers; 52 were degree-holding physicians and the rest were surgeons. Even at its peak of over 1,000 medical officers, the numbers were never adequate to care for the wounded. A later Director General of Army Medical Service commented that

the Medical Department as well as the British Army as a whole was totally unprepared. . . . At no time during peace had any thought been given to the possibility of the Army being engaged in a European War, and the outbreak found the Department entirely without a medical plan. (Cantlie, 1974a, pp. 6–7)

The greatest killer during the Crimean War was disease, which accounted for 16,334 deaths compared with the 1,724 deaths from wounds. The most deadly of all was cholera, with a death rate of almost 60 percent (see Cantlie, 1974a, p. 185). In the ranks, the death rate from wounds was 15.6 percent. Thirty-two percent of the wounded were returned to Britain, and 53 percent were returned to duty with their regiments. Over 12,000 primary amputations were performed on 8.5 percent of the force, with a death rate of 28 percent. The use of bleeding was no longer popular, but not because of any fundamental understanding of the proper treatment of wounds. This was still more than a decade before Lister would revolutionize the science of medicine. Chloroform was “universally employed except for minor operations” (Cantlie, 1974a, p. 191), and the first cases of contagious gas gangrene were recorded.

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per annum, and amongst the causes of ill health venereal, mostly syphilitic in origin, was the largest single factor with 20 to 25 per cent of admissions.

As reports of death and the deplorable conditions in regimental and general military hospitals reached Britain from the Crimea and public pressure mounted, the government was forced to act. First, it sent female nurses under the direction of Florence Nightingale to the main hospital base at Scutari, Turkey (Cantlie, 1974a, pp. 90–93); later came a Parliamentary Select Committee of Inquiry (Shepherd, 1991, pp. 373–409), and finally the Sanitary Commission came with the authority to act.

The Sanitary Commission grew out of the urban sanitary movement in Britain. In 1843, the publication of *The Physical Causes of the High Mortality Rate in Liverpool*, by Dr. William Duncan, provided both the link between sickness and its causes, “which are capable of removal by sanitary measures” (Hennock, 2000, p. 270), and the call for reform. During the Crimean War, civilians carrying this new standard started to encroach on the traditional purviews of military medicine.<sup>44</sup> Florence Nightingale and her army of nurses “attempt[ed] to mitigate the horrors of war, to prevent disease and save the lives of those engaged in military service by sanitary measures and a more careful nursing of the sick and wounded” (Forman, 1864, p. 3). Reports of their work and the deplorable conditions in army hospitals resulted in the appointment of the Sanitary Commission, which was given

powers to carry out whatever alterations . . . were considered necessary. . . . The[ir] authority therefore far exceeded that exercised by medical officers who were restricted to the role of advisers, and could enforce no executive action; if combatant officers were antagonistic and refused their advice they were powerless. (Cantlie, 1974a, p. 145)

Ultimately, conditions improved and the death rate was reduced. In June 1855, the Medical Staff Corps was established to exclusively perform hospital duties, but it still did not include the medical staffs of the regiments (Cantlie, 1974a, p. 149).

### From the Crimean War to World War I

In 1860, at the instigation of Nightingale, a military medical school was established to train military surgeons. In 1863, the Royal Victoria Hospital at Netley was opened and “became the center to which invalids from abroad were directed” (Cantlie, 1974a,

<sup>44</sup> The U.S. Army’s history of preventive medicine notes “although it is not possible to show specifically what, how, and when, measures of the civilian movement became incorporated in the precepts and activities of military hygiene and military preventive medicine, it is nevertheless obvious that such incorporations have occurred” (Bayne-Jones, 1968, p. 96). Shepherd also makes this point concerning the British Sanitary Commission. He notes that Dr. John Sutherland, the head of the Commission while

in practice in Liverpool . . . had been associated with the pioneer of urban sanitary reform, Dr. William Duncan, the first Medical Officer of Health to be appointed in Great Britain; and in 1848 Sutherland had become an Inspector under the Board of Health. [Dr. Hector Gavin, another of the commissioners,] . . . a leading sanitary reformer and the author of several works on public health, had held important government appointments during the outbreaks of cholera in 1849 and 1854, and at the time of his appointment to the Commission was Physician to the Post Office. (Shepherd, 1991, p. 395–396)

p. 223) and the natural place to relocate the Army Medical School. In 1873, the regimental hospital system was finally abolished, uniting the medical staffs in a single department “to give an impetus to improve the standard of professional knowledge in accordance with modern medical and scientific progress, and the effective treatment of casualties in modern war.”<sup>45</sup> The regimental hospitals, which had existed for over 200 years, could no longer provide the quality or specialized care that came with advances in medical science. They were replaced with modern station and garrison hospitals, which provided the patients “greater comfort and better treatment, for the professional skill of medical officers benefitted from the opportunities for consultation and exchange of opinions” (Cantlie, 1974a, p. 278).

In the field, a modern scheme for the echelonment of care was developed. “The complete range of medical units was created—bearer company, movable field hospitals, stationary hospitals, general hospitals, sanitary detachments, depot medical stores, and hospital ships” (Cantlie, 1974a, p. 281) to complement the new Field Army Corps of three divisions and a cavalry brigade—37,000 troops in all.

In 1877, medical officers were finally given the power to command their own staffs and patients. In 1878, the pay, privileges, and rank of medical officers were brought into line with the rest of the army. Also in that year, the period of enlistment was changed from 12 years to three years followed by nine years in the Army Reserve.<sup>46</sup> This included medical units. In 1884, the Army Hospital Corps was renamed the Medical Staff Corps. With the professionalization of other support services into the Army Service Corps, the British Medical Association pressed for the same for their colleagues in uniform. On June 23, 1898, the Royal Army Medical Corps was established, and the medical officers were “granted military rank and exercising the appropriate powers of command” (Cantlie, 1974a, p. 359).

The new field organization was put to the test during the Boer War (1899–1902) in South Africa, and further adjustments were made to better integrate the bearer company and field hospitals into a single unit under one medical authority, with a new emphasis on sanitation. By one account, the changes that had been made since the days of the Crimean War meant, “an efficient medical organization was ultimately recognized prior to the outbreak of World War One” (Rice, 1989, p. 149).

The work of the Sanitary Commission resulted in other permanent changes. In 1863, during the American Civil War, the U.S. Sanitary Commission was established in recognition of the work of the British Sanitary Commission during the Crimean War. The British Sanitary Commission was the antecedent of the International Com-

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<sup>45</sup> All did not greet the change with enthusiasm, as noted in Cantlie, 1974a, pp. 272–275.

<sup>46</sup> This was a modification of the Prussian reserve model that many countries adopted after it proved so effective for the Prussians during the Franco-Prussian War of 1870. While the British did not adopt universal conscription, they did provide for a period of reserve service after active duty. This is similar to the current U.S. system, in which a soldier undertakes a “military service obligation” when he or she is enlisted, which can be discharged by a combination of active service and service with a reserve unit. See Rostker, 2007a, pp. 9–11.

mittee of the Red Cross and its appeal “to all nations to form voluntary units to help wartime sick and wounded” (The Nobel Prize Foundation, 1917).<sup>47</sup>

The British system of military pensions was also inadequate. Appeals for private funds were so frequent that Parliament established the Royal Patriotic Fund Corporation to coordinate and oversee such private contributions. One of the philanthropic organizations to support veterans after the first Boer War in South Africa (1880–1881) was the Incorporated Soldiers and Sailors Help Society (1885), established

to help Soldiers and Sailors by providing them with the name and address of a “Friend” in each parish or ward throughout the Empire, to whom they may be commended on discharge from the Army or Navy for aid in obtaining Employment or other forms of Help suited to their needs.<sup>48</sup>

Given that a veteran often had no trade or skill, it was not surprising that the Soldiers and Sailors Help Society had little success, thus leading it to open workshops in London

to teach useful trades to men discharged as medically unfit, who, by reason of their disability, consequent on their service, are unable to take ordinary employment, and to make such cases, as far as possible, self-supporting, by disposing of the work they turn out.<sup>49</sup>

### **Expanding Care to Include Vocational Rehabilitation: A Prototype for America**

As early as 1872, civilian hospitals provided training opportunities to amputees, teaching them to produce the prostheses that were given to other patients. In that year, an institution was established in Copenhagen that, by 1897, had trained 255 children and 175 adults. In 1897, the orthopedic department of the Maximilian Hospital in Petrograd, Russia, organized a workshop for making surgical appliances; its double purpose was to teach the disabled a trade and to provide less-expensive artificial limbs. Eventually, 703 patients trained in the workshop, including disabled veterans of the Russo-Japanese War. Many were able to earn as much as similarly trained workers “with sound limbs” (Hunt, 1917, p. 13). Similar programs were established in France

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<sup>47</sup> According to the Nobel Prize Foundation, 1917:

As a result of the 1863 Conference, which hoped to see its Red Cross principles become a part of international law, an international diplomatic meeting was held at Geneva the following year at the invitation of the Swiss government. The assembly formulated the Geneva Convention of 1864; The International Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field. . . . [Although the] Red Cross has always given major service and often accomplished herculean tasks during time of war, it has achieved even greater service in its gradual development and operation of humanitarian programs that serve continuously in both peace and war.

<sup>48</sup> Incorporated Soldiers and Sailors Help Society, *Regulations for Office Holders*, p. i., as quoted in Faries, 1918a, p. 4.

<sup>49</sup> Incorporated Soldiers and Sailors Help Society, *Annual Report*, 1915, as quoted in Faries, 1918a, p. 5.



(1899) at the *Ateliers départementaux de la Seine* and in Belgium (1908) at Charleroi, providing classes in clerical work, tailoring, harness and saddle making, and bookmaking and bookbinding.

### **France**

These civilian programs demonstrated that the disabled could become productive members of society, but European governments were not ready for the onslaught of disabled soldiers that World War I would create. In France, it initially fell to local communities to start their own limited programs. The first began on December 16, 1914, in Lyons. In spring 1915, a “model school” was established in Paris for 300 “students.” Convinced that rehabilitation should start as soon as possible, the army opened schools at its physiotherapeutic hospitals and amputation centers in 1916. In March 1917, the ministers of War and Interior established a joint office to coordinate the numerous activities scattered around the country. The majority of these were boarding schools. Some guilds placed men in newly opened apprentice programs. These typically ran from four months to a year and taught a range of skills from mechanics to sandal making; the former was one of the longer courses, the latter one of the shortest. A veterans’ preference law reserved government jobs for the disabled for a period of “five years after the close of the war” (McMurtrie, 1918, p. 54). Veterans’ rights were formally recognized in Article 1 of the Reeducation of Disabled Soldiers Act of January 1, 1918:

Every soldier or sailor or former soldier or sailor disabled by wounds received in the war or by sickness contracted or aggravated during the war can demand his enrollment in a school of vocational reeducation with the object of being retrained for work and placed in employment. (as quoted in McMurtrie, 1918, p. 63)

### **Belgium**

Initially, Belgium had no program for dealing with disabled soldiers. They were, according to McMurtrie, 1918, p. 65, discharged and “left to shift for themselves.” This changed on November 5, 1914, with the establishment of an “absolutely compulsory” program. Thereafter, disabled soldiers were not discharged but were declared “candidates for discharge” and sent to reeducation schools, where they remained under army control.

### **Britain**

Prior to 1915, the British government’s treatment of disabled veterans was very poor because “the English system of caring for the disabled soldier . . . [left] the care of the ex-service man . . . largely to voluntary philanthropic organizations” (Faries, 1918a, p. 3). Faries, 1918b, p. 3, notes that “pensions on a very inadequate scale were given to disabled soldiers and sailors, but the state made no provision for training ex-service men or finding them employment.” By the end of the second year of the war, and with programs for the retraining of disabled veterans in Belgium and France as a catalyst,

public opinion started to change. On November 10, 1915, Parliament passed the Naval and Military War Pensions Act and increased the minimum pension for the large number of disabled soldiers returning from France and for the widows and orphans of those slain. It also, for the first time, formally addressed the issue of rehabilitating soldiers and sailors discharged from the service.<sup>50</sup> The act, however, continued the tradition of relying on private charitable organizations to provide needed support. Under the act, the Statutory Committee of the Royal Patriotic Fund Corporation brought together a number of local charitable committees, including the Soldiers and Sailors Help Society, to provide for the care of disabled officers and men after they left the service, including their health, training, and employment. It was not until April 1917 that the Ministry of Pensions took over sole responsibility for the rehabilitation of disabled veterans. The April 1917 law required a new set of Royal Warrants, which explicitly stated that, once a permanent pension had been granted, it could not be altered if the person's earning capacity changed for any reason, including training. Rather, a veteran's pension was to be set based on the degree of his physical handicap, not the decrease in his earning capability, which had been the historic standard.

In Britain, the military services and the ministries of Pensions and Labor shared responsibility for rehabilitative services. The military was responsible for "functional reeducation," what we would today call occupational therapy, during the initial period of hospitalization, while the soldier was still in the service. The military was also responsible for the time a patient spent in what could be called a *fitting* or *convalescent* hospital, where he learned to use an artificial limb. The military also provided workshops so that the maimed soldier could begin to learn a trade. During this period of convalescence, he continued to receive his army pay and allowances.

The ministries of Pensions and Labor established the Trade Advisory Committee to guard against overproduction in any given trade. Individual training plans for each disabled veteran were developed by local committees and submitted to the Ministry of Pensions for approval. The training itself was provided either by a local committee or, for certain skills, by one of 20 regional joint committees. Generally, disabled veterans were enrolled in existing vocational schools,<sup>51</sup> to which the Ministry of Pensions paid the same fees an ordinary student would pay, although the ministry would make special arrangements to reimburse out-of-pocket expenses.

<sup>50</sup> In February 1915, the report to Parliament of the Disabled Sailors and Soldiers Committee declared that

The care of the sailors and soldiers, who have been disabled in the war, is an obligation which should fall primarily upon the State; and that this liability cannot be considered as having been extinguished by the award of a pension from public funds. We regard it as the duty of the State to see that the disabled man shall be, as far as possible, restored to health, and that assistance shall be forthcoming to enable him to earn his living in the occupation best suited to his circumstances and physical condition. (as quoted in Faries, 1918a, p. 7)

<sup>51</sup> The establishment of technical schools dates to 1837, when "Parliament recognized the need of schools of design to improve the fabrics of its manufacturers and voted to establish schools of design," (Faries, 1918b, p. 5). In 1889, Parliament passed the Technical Instruction Act, directing localities to establish tax-supported technical schools. By 1917, there were 150 technical schools in Britain.



While some argued that the local committees provided a familiar, sympathetic touch, others felt that this decentralized system was “clogged by delays and a glut of red tape” and was incapable of handling the “seething mass of discharged men.” At one point during the war, as few as 10 percent of those discharged were “undertaking training.”<sup>52</sup> Given the great number of returning veterans, the lack of training facilities in general and the lack of specific training courses appropriate for their disabilities were persistent problems.

## The Legacy

The American experience is firmly built on its European heritage, starting in the colonial period and following through to the eve of our entry into World War I. The provision of medical services to our troops during our early history mirrors closely the care European powers provided their troops. As we will see in the forthcoming chapters, America certainly learned the best lessons the British and French had to offer from the Crimean War of 1854 in the development of medical services during the Civil War, so much so that one French authority noted that Americans were able to “get hitherto unheard of results in their hospitals” (Sieur, 1929, p. 219).

In terms of care for veterans and their pensions, we directly built on the European system, incorporating the new programs of rehabilitation that arose during World War I. As the following chapters show, the earliest military pensions for disabled soldiers of the colonies came directly from the English laws of the time. The development of homes for disabled and indigent veteran soldiers and sailors came directly from the experiences of France and Britain. The extension of veterans’ programs to encompass rehabilitation came from the programs the allies developed in the first years of World War I. The chapters that follow offer the details of how these American institutions were built on these European foundations.

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<sup>52</sup> These arguments, pro and con, are presented in McMurtrie, undated (circa 1918), p. 13.

## The American System of Providing for the Wounded Evolves

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### The American Colonies

The events of 17th century England were familiar to the American colonists, whose own medical treatment and care of the wounded closely reflected contemporary English practices in terms of both the provision of care and the treatment received. The first colony to address the care of a wounded soldier was the Plymouth Colony (Massachusetts). In 1636, it provided for the conscription of soldiers and ordered that a soldier sent outside the colony if “maimed or hurt” be “maintained completely by the colony during his life” (McMurtrie, 1919a, p. 22). The colony appointed the first surgeon to support the militia in 1676. Pruitt, 2006, p. 717, notes, however, that the practice of medicine was “still in consonance with . . . [the] theory” of laudable pus and outcomes for the injured “could only be considered bleak.”

The Virginia Assembly provided for the care of its wounded and maimed soldiers in 1644: “diverse men . . . hurt and maimed and disabled . . . [to] be relieved and provided for” (Adkins, 1967, p. 22). Shortly after, Virginia also extended relief to “the needy dependents of any colonist killed in the service of the colony” (McMurtrie, 1919a, p. 23). Maryland provided for their disabled soldiers in 1661, followed by New York in 1691; North Carolina in 1715; New Hampshire in 1718; Rhode Island in 1718; South Carolina in 1747; Georgia in 1755; and Delaware in 1756. New Jersey and Pennsylvania did not pass similar laws until 1777 (Adkins, 1967, p. 23).

These colonial laws had several things in common. They were all based on the English Act for the Relief of Souldiours of 1593. All sought to reassure enlistees that, if they were wounded and disabled, the state would take care of them and their families. However, to receive the promised annuities, pensioners generally had to be incapable of earning a living, and widows or dependent children had to be destitute.

During the Revolution, some colonies were more generous and also more specific about what might happen to a disabled soldier and his family. In 1778, the Continental Congress, promised “full pay during the life of all of her soldiers in the Continental Army who might be disabled in the service” (Glasson, 1918, p. 18). Widows of those who died while in service would receive half their spouse’s pay for life.

## The Continental Army of the American Revolution

The army the Continental Congress established was somewhat cobbled together at first. Each of the former colonies supplied its own troops (eventually with an annual quota) and was responsible for their clothing, food, and pay, as well as their medical care. This lack of effective central management meant that levels of recruitment and support varied widely. Enlistments were also short—too short for the troops of the Continental Line to become proficient in European linear tactics. General George Washington, the commander-in-chief, wanted Congress to specify a minimum of three years of service to build proficiency, but Congress never agreed.

As the war dragged on, it became increasingly difficult to find volunteers to meet enlistment quotas. So, the states increased bounties, shortened enlistment terms, and (reluctantly) forced men to serve. The army's composition reflected a variety of enlistment terms. Washington's genius was that he built an effective army under such conditions.<sup>1</sup> By one estimate, approximately 400,000 fought for the new nation during the Revolution. Continental troops numbered about 232,000, with another 164,000 being militia from the states (Sparrow, 1952, p. 3). The largest force fielded at any single time during the war, however, was estimated to be 17,000. At the battle of Trenton, Washington commanded no more than 4,000 soldiers. Terms of enlistment ranged from several months to one year, with soldiers returning home at the end of that period. It was common for soldiers to serve several periods of enlistment as the need for manpower ebbed and flowed.

In many ways, American and British soldiers were alike. The American soldiers from New England who laid siege to Boston were from a yeoman class that had "land and property." Fischer, 2004, p. 21, suggests that "these Yankee regiments may have been the most literate army in the world. Nearly all New England privates could read and write." Their British counterparts were not all that different:

While the dregs of society did indeed count among the Line's troops, the great majority were young countrymen from rural England, Scotland and Ireland. They were farmers, unskilled laborers, and tradesmen . . . who were recruited, not pressed into service, drawn by the promise of clothing, food, and steady, if meager, pay, along with a chance at adventure, perhaps even a touch of glory. (McCullough, 2005, p. 167)

In one way, however, they were very different:

The average British regular was in his twenties, or about five years older than the average American soldier, but the average regular had served five or six years in the

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<sup>1</sup> McCullough, 2005, p. 62, says that "nearly all of . . . [Washington's] effort and those of senior officers were concentrated . . . on trying to hold the army together." Fischer, 2004, p. 270, describes the lengths Washington had to go to after the victory at Trenton when "the enlistments of many experienced troops would expire on December 31, . . . [when] some of the best regiments seemed the most determined to depart."

army, or five or six times longer than the average volunteer under Washington. To the British rank-and-file there was nothing novel about being a soldier. The harsh life was their way of life. They carried themselves like soldiers. They had rules, regulations, and traditions down pat. (McCullough, 2005, p. 167)

The traditional enemy of the colonists was the Indian. While the tactics used to fight the Indians inflicted numerous casualties on the British, they did not win battles. Despite folklore to the contrary, it was armies that employed European tactics—standing in ranks and trading volleys—that won battles. It was not until Baron Von Steuben taught the Continental Army the art of 18th century warfare at Valley Forge during the winter of 1777 and 1778 that the Americans started winning.<sup>2</sup>

The battlefield tactics both sides employed depended on the terrain; the number of troops available; and, most important, the weaponry at hand. The musket was the dominant weapon of the day, but its limitations dictated how soldiers fought. The tactics of the era sought to blast opponents off the battlefield with concentrated musket fire. To accomplish this, soldiers were lined up in three ranks, bringing the maximum number of muskets to bear on the enemy. Firing rank by rank, the massed musketeers could fire a devastating nine volleys per minute. Without smokeless powder, however, the battlefield was obscured after the first volley, and soldiers had to be trained to fire at areas rather than individual targets. It was not the individual soldier who mattered, but the integrity of the line. The soldiers also had to learn the discipline of staying in rank even while under fire from the enemy, lest the line break. As a result, a regiment was rated not by how well it could deliver a volley of musket fire but rather by how well it stood after receiving a volley.

The discipline the British troops had, and which the American troops initially lacked, was not just the ability to hold the line in the face of musket volleys but also to withstand an assault by an enemy with the “terror weapon” of the 18th century, the bayonet.<sup>3</sup> Not until the battle of Stony Point in spring 1779 could one write of an American unit that had “charged through the gaps routing the British defenders at bayonet point. . . . [And that] the ferocity of the bayonet wielding [American] Light Infantry was too much for the British defenders who surrendered” (Moran, 2009).

While the centerpiece of military training was the discipline to hold the line against volley and bayonet, this type of classic 18th century battle was rare. Most of a

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<sup>2</sup> Steuben’s training technique was to create a “model company,” a group of 120 chosen men who, in turn, successively trained other personnel at regimental and brigade levels. Perhaps Steuben’s biggest contribution to the American Revolution was training in the use of the bayonet. Since the battle of Bunker Hill, Americans had mainly depended on their ammunition to win battles. The results of Steuben’s training were first in evidence at the battle of Monmouth in June 1778.

<sup>3</sup> Fischer, 2004, p. 97, notes that, after the victory at Brooklyn Heights, the British Commander issued an order:

Soldiers are reminded of their evident superiority . . . by charging the rebels with their bayonets even in the woods where they had thought themselves invincible. The General therefore recommends to the troops an entire dependence upon their bayonets.

soldier's time was spent in camp or maneuvering from one location to another, where soldiers were assigned guard or picket duty. Such assignments, however, were also arduous and hazardous, as indicated by this account:

Their whole time is spent in marches, especially night marches, watching, starving in cold weather, freezing and sickness. If they get any chance to rest, it must be in the woods or field under the side of a fence, or in an orchard or in any other place but a comfortable one, lying down on the cold and often wet ground, and perhaps before the eyes can be closed with a moment's sleep, alarmed and compelled to stand under arms an hour or two, or to receive an attack from the enemy. (Curran, 1998)

The American soldier of the Revolution had more to fear from camp life or from being taken prisoner by the British than from the wounds of battle, which were relatively rare. Battle casualties accounted for only 10 percent of deaths. Poor camp sanitation and resulting disease accounted for more deaths than any other cause. Relative to all other situations, being taken prisoner by the British was the deadliest killer of American soldiers. Of the more than 17,000 Americans soldiers taken prisoner, 47 percent died in captivity from typhus and other diseases.<sup>4</sup> Given the state of medicine, however, those wounded in combat did not fare much better.

### Caring for the Wounded of the Revolution

Soldiers wounded during the Revolutionary War were cared for by an evolving array of treatment facilities that were often in open conflict with one another, usually over bureaucratic issues. In July 1775, Congress selected George Washington of Virginia to command the Continental Army besieging Boston. That same month, Congress also established the Army Medical Department and appointed Dr. Benjamin Church its first "Director General and Chief Physician of the Hospital of the Army" (Gillett, 1981, p. 26).<sup>5</sup> One of Washington's first acts as commander-in-chief was to respond to a plea by one of his generals that "the sick suffer much for want of good female nurses."<sup>6</sup>

<sup>4</sup> In August 1775, the king declared Americans in arms against royal authority to be traitors to the Crown. The British government at first started treating captured rebel combatants as common criminals and prepared to bring them to trial for treason. Fearing retaliation against Loyalists, this never happened, but the conditions aboard British prisoner ships were horrendous. Of the 230 American officers and 2,607 soldiers who surrendered at Fort Washington, only 800 were still alive 18 months later (Rastatter, 2002).

<sup>5</sup> Church's tenure was rather short. Dr. John Morgan replaced him on October 17, 1775 (Ashburn, 1929, p. 14). Shortly after his appointment, Church was called on to explain a secret letter he sent to a British major in Boston. On November 6th, he was expelled from the army and imprisoned for espionage (Duncan, 1931a, pp. 63–64).

The staff of the Continental Hospital Department did not hold military rank or enjoy the privileges of officers (Gillett, 1981, p. 41).

<sup>6</sup> Congress authorized one nurse for every ten patients and one matron for every ten nurses. The matron was responsible to "take care that the provisions are properly prepared; that the wards, beds, and utensils be kept in neat order; and that the most exact economy be observed in her department." The pay of the nurse, originally \$2

When Church arrived at Cambridge, soldiers were being treated in about 30 regimental hospitals. He tried to consolidate treatment in several large hospitals, including a “convalescent house,” and met immediate resistance from the regimental physicians. The ensuing struggle between the Medical Department and the regimental system of decentralized care lasted throughout the war and continued for most of the next century.<sup>7</sup> Ashburn, 1929, pp. 21–22, sums up the history of the Medical Department during the Revolution this way: “The history . . . includes far too much medical quarrels and charges of incompetency. Of the four Directors General, one was tried and two others dismissed. We find little in which to take great pride.”

There were both medical and organizational reasons for this animosity. At the time of the Revolution, there were only two hospitals in all the colonies, a hospital in Philadelphia started by Benjamin Franklin in 1755 and a partially reconstructed hospital in New York that had opened in 1771 and was destroyed by fire in 1774. In retrospect, it is clear that a stay in a hospital increased, rather than decreased, one’s chance of dying. Duncan, 1931a, p. 9, notes that “a vastly greater number of the wounded died of infections contracted in hospitals, dysentery and typhus, than of the effects of their wounds.” The danger was not just to the patient. During the Revolution, more surgeons died in proportion to their numbers than line officers (Duncan, 1931a, p. 20). Dr. James Tilton, who would later serve as the Army Surgeon General during the War of 1812, described the situation around New York in 1776: “The sick flow in a regular current to the hospital; these are overcrowded so as to produce infection, and mortality ensues too affecting to be described” (Duncan, 1931a, p. 111).

Keeping patients close to their comrades in the more dispersed regimental hospitals therefore made some medical sense, but in truth these were hardly hospitals at all “but merely a collection of the sick of a regiment, in some house, barn or other buildings. There were no beds or other facilities” (Duncan, 1931a, p. 128).

The counterargument in favor of the general hospitals was the need to address the often poor qualifications of regimental surgeons and their mates, and the observation that a single general hospital was cheaper to run than a collection of regimental hospitals (Duncan, 1931a, p. 62).

At the start of the war, there were 3,500 physicians and surgeons in America, but only 400 of them had medical degrees. The distinction between physicians and surgeons was never as dysfunctional in America as it was in Europe, and the skills of both were needed. Disease, rather than battle injuries, was the main medical problem

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per month and one ration per day, was increased to \$8 per month and one ration per day. The matron received \$15 per month and a daily ration (U.S. Army Medical Department, 2011).

<sup>7</sup> Formally, the regimental system ended in April 1777, but “the enmity between regimental and hospital surgeons . . . Continued to plague the department for a time and their ‘continual jealousies and altercations’ in January 1778 ‘had a very pernicious influence,’ in Washington’s opinion” (Gillett, 1981, p. 40).

Washington faced,<sup>8</sup> as did all armies up until World War II. During the Revolution, 90 percent of American deaths and 84 percent of British deaths were from disease.<sup>9</sup> Of all diseases, smallpox was the scourge Washington feared most. He wrote Governor Patrick Henry of Virginia that smallpox was “more destructive to an army in the Natural way, than the Enemy’s Swords” (as quoted in Gillett, 1981, p. 75).

In winter 1777, Washington ordered that the entire Army be inoculated. The program was repeated in the winter of 1778. These programs “made the Continental Army largely immune from this scourge for the remainder of the war” (Greenwood and Berry, 2005, p. 3). Typhus, typhoid fever, and malaria, however, continued to take their toll.

Despite this early form of inoculation, the medical treatments of the day were “largely ineffective” (Gillett, 1981, p. xi). No less a leading figure than Dr. Benjamin Rush, a delegate to the Continental Congress and signatory to the Declaration of Independence, who later was a professor of medical theory and clinical practice at the University of Pennsylvania, was a proponent of bloodletting, sweating, emetics, laxatives, and enemata, which he recommended be “applied to sick and wounded patients regardless of their injury or physiologic status” (Pruitt, 2006, p. 717). By the standards of the day, as suggested by Dr. John Jones in America’s first surgical manual on the treatment of wounds and fractures, a bullet should be removed only if easily reachable, and “the absence of swelling and lack of pus by the fourth day were considered to be bad signs indicating that wound digestion, necessary for proper healing, was impaired” (Pruitt, 2006, p. 718). Given such medical treatments, it is no wonder that gunshot wounds to the extremities and fractures, particularly compound fractures, usually resulted in amputation, with mortality rates as high as 65 percent. Those who survived the loss of a limb were disabled for life and were dealt with accordingly.

### **Caring for the Disabled of the Revolution**

Not until the second year of the Revolution did Congress consider “what provisions ought to be made for such as are wounded or disabled in the land or sea service.”<sup>10</sup> Until then the matter fell into the hands of the individual colonies. When Congress finally took up the matter, it did so using the standards of the day, which were the payment of pensions and/or cash bonuses and sometimes the establishment of soldiers’ homes. The concepts of reconstruction, reconditioning, and rehabilitation would not appear for almost another century and a half.

<sup>8</sup> While Washington thought his losses at Trenton were “very trifling indeed, only two officers and one or two privates wounded,” many more died of exhaustion, exposure, and illness. “It is very likely that the number of American deaths from nonbattle causes as a result of the attack on Trenton was larger than the total number of Hessian losses in combat” (Fischer, 2004, p. 255).

<sup>9</sup> The British maintained better sanitary conditions in their camps. See McCullough, 2005, p. 167.

<sup>10</sup> On June 20, 1776, as quoted in Adkins, 1967, p. 28.



The law Congress enacted on August 26, 1776, was a logical extension of both British precedent and the existing statutes of the colonies.<sup>11</sup> Congress set a national standard of

half pay for life or during disability to every officer, soldier, or sailor losing a limb in any engagement or being so disabled in the service of the United States as to render him incapable of earning a living. Proportional relief was promised to such as were only partially disabled from getting a livelihood. (Glasson, 1918, p. 20)

While the Declaration of Independence had not yet been signed, the resolution used the word *states*, not *colonies*. The resolution charged them with providing whatever pay and allowances were due to their soldiers. The law also provided that pensioned officers, soldiers, and sailors capable of limited duty could be formed into a corps of invalids to provide limited service.<sup>12</sup>

### The Corps of Invalids

The Invalid Corps established in 1777 was reminiscent of the French innovation of Louis XIV.<sup>13</sup> Congress authorized a corps of 40 officers and 920 enlisted men that would provide military training to future officers, guard stores of materials (depots), and act as recruiters.<sup>14</sup> By public notice, all personnel already receiving half pay were to present themselves to be examined and, if judged capable of duty, were to be enlisted

<sup>11</sup> Several states made provisions independent of what the Continental Congress supplied. For example, in May 1778, Virginia “promised full pay during life to all her soldiers in the Continental Army who might be disabled in service; and in October 1887 . . . enacted a law promising half pay during life to widows of persons who were killed or who died in service.” Finally, in May 1779, Virginia enacted half pay for life for all officers who continued to serve until the end of the war. (Weber and Schmeckebier, 1934, p. 5)

<sup>12</sup> The Army’s history of the Continental Army notes,

The British Army used separate companies of men not fit for field duty to garrison fortifications in the home islands. The Continental Army, reflecting its growing professionalism, turned to a similar organization to free combat units from defending depots not in immediate danger. (Wright, 1983, p. 136)

<sup>13</sup> The idea for such a unit is attributed to Lewis Nicola. See Haggard, 2002, p. 148. The resolution of the Continental Congress of July 16, 1777, provided that

before they [the hospital departments] discharge any serjeants [sic] corporals, or private men from the hospitals as unfit for service, they consider, whether such men are actually, or likely soon to be, capable of doing garrison duty . . . that they may not be entirely discharged from the service, but transferred from the regiment to which they actually belong, to that of invalids. . . . That notice be sent . . . to the generals commanding the armies, of the raising [of] a corps of invalids, . . . in case they have any sergeants, corporals, drummers, or private men deemed incapable of doing field duty, . . . and, if judged fit for garrison duty, that they be not discharged, but transferred to the invalid corps. . . . Men having only one leg, or one arm each, if otherwise capable of doing garrison duty, are to be deemed proper recruits for this corps. (Continental Congress, 1906, p. 554–556)

<sup>14</sup> These numbers are from Forman, 1965, p. 19. On June 20, 1777, the Continental Congress directed that a corps of invalids be formed, . . . to be employed in garrisons, and for guards in cities and other places, where magazines or arsenals, or hospitals are placed; as also to serve as a military school for young gentlemen, previous to their being appointed to marching regiments. (Continental Congress, 1906, p. 485)



in the Invalid Corps. In the field, by the General Order of August 6, 1777, General Washington ordered that those with the Army who were incapable of serving with troop units be medically examined, “and if judged fit for garrison duty, they are not to be discharged, but transferred to the Invalid-Corps” (as quoted in Haggard, 2002, p. 149). Invalid Corps units were initially set up in Philadelphia, then in Boston, and finally at West Point in 1781. Generally, the corps had neither the authorized number of officers or enlisted, and only four of the authorized eight companies were manned. In August 1782, the corps could muster only 27 officers and 337 enlisted men (Wright, 1983, p. 175).

Members of the Invalid Corps received full pay and allowances. Subsequent amendments in 1778 extended the terms of invalid pensions to all veterans of the war, and in 1782, all sick or wounded soldiers unfit for either garrison or field were given the option of requesting that they be discharged and receive a monthly stipend or that they serve with the Invalid Corps.

### **Invalid (Disability) and Service Pensions**

In 1776, Congress resurrected a practice dating to Roman times.<sup>15</sup> To encourage men to join and stay in the Army, Congress and some individual states authorized grants of land for those who served for the duration of the war. The grants ranged from 100 acres of land for enlisted men to 1,100 acres for a major general. On August 24, 1780, Congress also partially addressed the needs of widows and orphans. It provided for delivery of half pay to the widows and orphans of officers for seven years. No provision was made for the widows and orphans of the other ranks (Obermann, 1965, p. 137).

When the Army was disbanded on November 3, 1783,<sup>16</sup> Congress established a schedule of disability pensions to be administered by the states. The standard for total disability was half pay for officers and \$5 per month for enlisted men, with partial payments for a partial disability.<sup>17</sup> In 1790, with an uneven and inconsistent record of state payment, Congress took over the payments of invalid pensions. In 1792, the rolls listed 1,500 invalid pensioners (Glasson, 1918, p. 23). What followed was a long series

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<sup>15</sup> For a discussion of this Roman practice, see Llewellyn and Jones, 1919, pp. 1–2. During the Revolution, those who met the service requirements were issued War Bounty Warrants by either what would become the federal government or the states. The act of the General Assembly passed on June 22, 1779, which established the Virginia Land Office, also provided for the awarding of bounty lands for specified Revolutionary War military service. The first warrant was issued in 1783 and the last in 1876 as heirs of warrantees continued to seek lands for additional service (Library of Virginia, 2012).

<sup>16</sup> The Corps of Invalids was “reduced” on May 1, 1783, with officers and men receiving one month’s pay and “further payments which may be made to the other parts of the army, when reduced” (Hamilton, 1850, pp. 246–247). A total of 22 officers and 272 privates were discharged (Haggard, 2002, p. 161).

<sup>17</sup> At the time, base pay for privates in the U.S. Army was \$5 per month; for corporals, \$7; and for sergeants, \$8. Basic pay for a lieutenant was \$30 a month, and for a captains, it was \$40 per month, with both officers receiving an additional subsistence allowance (Mussulman, 2012).

of Revolutionary War pension laws, each of which provided pensions only for death or disability contracted in service.

While Congress treated the disabled generously, it was bitterly divided over the issue of pensions awarded to officers after the war for nothing more than good and faithful service. Early in the debate, the Governor of New Jersey termed the proposal of half pay for officers for life “a very pernicious precedent in republican states . . . [that] render[s] the pensioners themselves in a great measure useless to their country” (as quoted in Glasson, 1918, p. 29). Opposition to service pensions for officers was centered in the New England states, where people saw little difference in social status between officers and the other ranks. In contrast was the more aristocratic view of the southern gentry who had served as officers.

During the years of debate, New Englanders took little comfort in Washington’s view that the enlistment bonuses paid to enlisted soldiers, together with a year’s full pay at the end of the war, were sufficient and compared favorably with the half pay for life that officers were to receive. Neither were they moved by the argument that half pay for officers for life closely followed the British practice of placing officers on a half-pay retainer subject to recall in time of war. They also did not support the provision several proposals contained that payment continue to the officer’s widow regardless of whether the officer died on the field of battle or in retirement or proposals that the commission be transferable, allowing the recipient to sell his pension, with the buyer receiving payment during the life of the original commission holder (Glasson, 1918, p. 29).

Congress passed the first service-pension law on May 15, 1778. It was a compromise: half pay for only seven years after the war, with some other restrictions, rather than the half pay for life the officers had demanded. The compromise did not stand, however, and after much lobbying by Washington, Congress finally voted benefits for widows and orphans of officers and granted half pay for life to officers on August 24, 1780 (Glasson, 1918, p. 33). Many officers questioned whether they would actually receive the promised compensation and pressed for a more-immediate payment, one that could not be terminated by some future Congress. The Commutation Act, passed March 22, 1783, offered an alternative: Officers could receive five years’ full pay in money or securities, carrying an interest rate of 6 percent, in lieu of half pay for life, “as Congress should find most convenient” (as quoted in Glasson, 1918, p. 41). However, even this did not put the issue to rest with anticommutation sentiment running high in the New England states (Glasson, 1918, pp. 46–49).

At the time of disbanding, 2,480 officers were entitled to half pay or commutation. Unfortunately, officers soon found that the government could neither pay the interest nor redeem the commutation certificates. Many officers sold their certificates for as little as 12-1/2 cents on the dollar (Glasson, 1918, p. 49). Finally, in 1791, the new federal government agreed to honor the obligation, but by then, many of the certificates were in the hands of speculators. Not until May 15, 1828, did Congress finally

address the grievances of the surviving 850 Revolutionary War officers and soldiers with a grant of full pay for life (Glasson, 1918, p. 51).

## Developing a National System

After March 4, 1789, when Congress took over the payments from the states and placed them under the supervision of the Secretary of War, federal control expanded in a number of steps:

- In 1792, Congress agreed to consider additional claims not brought originally in a timely manner as stipulated by law. Congress set up a system in which federal judges heard questions concerning pensions for invalids, and their rulings were subject to the concurrence of the Secretary of War and final congressional revision. The system resulted in the earliest recorded case of judicial review of an act of Congress, a decade or so before *Marbury v. Madison* settled the question.<sup>18</sup> The judges complained that Congress had no authority to assign them administrative duties that were subject to outside supervision. As a result, Congress changed the law in 1793 to require federal judges to take only evidence that was forwarded to the Secretary of War.
- In 1799, Congress established a separate Navy Pension Fund. While the government guaranteed the payment of both invalid and service pensions, the first sources of funds for each came from the “sale of prizes taken at sea” (Glasson, 1918, p. 100).
- In 1802, Congress established standards for the Regular Army. Invalid pensions for totally disabled officers were not to exceed one-half of the monthly pay and, for all enlisted personnel regardless of grade, not to exceed five dollars per month. Widows and orphans under age 16 of commissioned officers who died in service as a consequence of wounds received half pay for five years. These provisions were generally extended to troops recruited to fight in the War of 1812, the Indian Wars, and the Mexican War.
- In 1805, Congress recognized that disabilities might develop years later and provided compensation for what today we commonly call *service-connected disabilities*.
- In 1806, Congress completed the federalization of invalid pensions by assuming responsibility for all those who fought the “common enemy,” including “all volunteers, militia and state troops” (Glasson, 1918, p. 63).

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<sup>18</sup> One circuit court in Pennsylvania ruled that the assignment of the additional duties was contrary to the Constitution and declared the pension action of 1792 “unconstitutional.” The Supreme Court heard the case but never finally ruled before Congress changed the law. See Glasson, 1918, p. 58.

- In 1808, all veterans' benefits came under the administration of the federal government (Obermann, 1965, p. 139).
- In 1812, Congress provided that militia and volunteer troops had the same right to invalid pensions that Regular Army soldiers enjoyed, as laid out in the act of 1802. For soldiers of the War of 1812, service pensions came years later, as had service pensions for the majority of those serving in the Revolutionary War.
- In 1816, as the fiscal condition of the federal treasury improved with a flood of imports and associated tariffs after the War of 1812, Congress authorized service pensions to indigent veterans. It increased both invalid- and service-pension payments again in 1818. At that time, only 1,252 disabled officers and enlisted men were receiving disability compensation (Obermann, 1965, p. 140).
- In 1818, the treasury was in "excellent condition with surplus funds coming in from special levies that had been applied during the War of 1812 and from increased tariff rates on imports" (Obermann, 1965, p. 140), so regulations were changed to allow the Department of War "for the first time to reward veterans rather than entice men to enlist" (Dann, 1980, p. xv) and to grant pensions on the oath of an applicant as to service and need rather than on disability.<sup>19</sup>
- In 1820, Congress, concerned about the abuses and fraud that followed the 1818 changes, removed many from the rolls. Subsequent waves of prosperity and recession saw similar tides in favor of increasing or reducing veterans' benefits, especially means-tested service pensions. For example, after 1826, any veteran who had property valued as not in excess of \$300 was placed on the pension rolls. In 1828, that limit was raised to \$960.
- In 1828, Congress authorized full pay for life for all surviving Revolutionary War officers who were qualified under the Half Pay for Life Act of 1780.
- In 1832, Congress passed the first comprehensive pension act, "providing a yearly grant to every man who had served for six months or more. To be eligible, a soldier no longer had to be disabled or poor, and service in any military organization was satisfactory, as long as the service could be proved beyond a reasonable doubt" (Dann, 1980, p. xv).<sup>20</sup> However, determining who had served was difficult because it was common for soldiers to be mustered out when their term of enlistment was completed without any written record of their discharge (Sparrow, 1952, p. 3). It was also common for soldiers to serve multiple enlistments, depending on the season of the year and where the fighting was taking place. Given that it took no more than to appear in court to swear to one's service, supported by

<sup>19</sup> Dann argues that the more-generous pensions might have been due to nostalgia for the long-past war and a growing spirit of nationalism. Dann, 1980, p. xvi, notes: "The Revolution took on a romantic aspect in the minds of Americans who had not lived through the conflict. The youngest veterans were now in their sixties, grandfathers with stories to tell, and the country was wealthy and secure enough to show its gratitude."

<sup>20</sup> The applications in support of the 1832 act created what one historian has called "a remarkable body of historical data," examples of which can be found in Dann, 1980.

two “character” witnesses, by one account, “the number of pensioners and unsuccessful applicants was greater than the number of white male citizens in the country old enough to have served in the Revolution.”<sup>21</sup>

- In 1833, Congress approved the concurrent receipt of both invalid and service pensions.
- In 1836, Congress extended the pension list by including the widows of Revolutionary War soldiers, which substantially increased the cost of Revolutionary War pensions.<sup>22</sup>
- In 1838, Congress provided pensions for widows who had married veterans before 1795. In 1848, this was extended to widows married before January 1800. In 1855, all widows, no matter when they were married, were granted pensions, and in 1878, the term of service of the soldier whose widows would receive pensions was reduced to “any single engagement or had fourteen days of service” (Dann, 1980, p. xvi). Similar extensions of pensions for widows of Civil War soldiers were granted in 1890.

### Institutional Care

Historically, disabled veterans were generally helped through cash payments. While hospitals and domiciles were established following the European model, these were generally for acute medical care and for indigent veterans.<sup>23</sup> In 1798, following the British tradition of the Chatham Chest, Congress provided for the relief of sick and disabled *merchant* seamen by imposing a special tax on any American ship coming from a foreign port. A 20-cents-a-month contribution was taken from each seaman’s wages to pay for the establishment of a number of marine hospitals for merchant seaman. In 1804, the first hospital built and operated by the federal government for the care of sick and disabled merchant seaman was opened in Boston. This was the precursor of the U.S. Public Health Service (USPHS) and the hospital system of the Department of Veterans Affairs.

In 1799, Congress authorized the establishment of the U.S. Navy Asylum, later renamed the U.S. Naval Home for “disabled and decrepit navy officers, seamen, and

<sup>21</sup> Statement by Congress Chambers of Pennsylvania on the floor of the House of Representatives (Glasson, 1918, p. 84).

<sup>22</sup> Revolutionary War pensions cost approximately \$70 million in total. The invalid pension cost something less than \$4 million and was awarded to between 2,000 and 3,000 men. Approximately 23,000 widows and dependents got about \$20 million. The vast majority of all funds covered payments to between 52,000 and 58,000 service pensioners, with the last surviving widow being paid in 1878 (Glasson, 1918, pp. 95–96).

<sup>23</sup> Obermann, 1965, p. 146, notes:

Vocational training and rehabilitation as we know it today [1965] were not proposed or applied, except as individuals and families might have turned to formal education or apprenticeship as means of helping disabled veterans to overcome their handicaps. Counseling, aptitude analysis, vocational education, selective placement . . . [did not reach] the stage of formal disciplines . . . [until World War I]. Compensation and pensions were relied upon to solve the disabled veterans’ problems.

marines” to be paid for by the same 20 cents a month each seaman paid that had been imposed on merchant seamen the year before. The institution, originally established in Philadelphia, did not open until 1811. A similar institution for the Army opened in 1851; it continues today as the U.S. Soldiers Home. In 1855, St. Elizabeth’s Hospital in Washington, D.C., opened for the treatment of the mentally ill of the Army and Navy.

## **Wars of the Early 19th Century: The Indian Wars, the War of 1812, and the Mexican War**

On June 2, 1784, by act of Congress, the Regular U.S. Army was limited to 80 enlisted men and “a hand full of officers” to guard the military stores at West Point, New York, and Fort Pitt, Pennsylvania, as well as a contingent of 700 militia from Connecticut, New Jersey, and Pennsylvania assigned to man the forts in the Northwest Territory that the British had evacuated under the terms of the Treaty of Paris.<sup>24</sup> Medical support for the Army units lay, for all practical purposes, entirely in the hands of individual surgeons, who were frustrated by shortages of medicine and supplies. Given the threat of Indian attacks along the frontier, it soon became clear that the government, under the Articles of Confederation, was unable to provide for the military needs of the new nation.

Ratification of the Constitution in 1788 set many changes in motion, although perhaps not as swiftly in some areas as others. On April 30, 1790, Congress authorized an Army consisting of 1,273 officers and enlisted men to serve for three years. There was no medical structure above the regiment until 1818, with the brief exception of a period in 1798 and during the War of 1812. While there were a few surgeons and mates serving with regiments or in posts, the surgeons served under the command of their respective regimental or post commanders and had “no common organization, head or interests” (Ashburn, 1929, p. 39).

The Army Congress authorized in 1790 was too small and scattered to address the recurring Indian problems in western Pennsylvania and Kentucky, so Congress relied on state militias to patrol the frontier. The states’ initial campaigns against the Indians did not go well. By 1798, Congress was ready to act. Rather than continuing to rely on state militias, it again increased the authorized size of the Army—Regular Army and federal volunteers—to 10,000 men. On March 2, 1799, it also created a medical department to “Regulate the Medical Establishment” of the armed forces.<sup>25</sup> As the Army history of the period notes, the act provided for a

<sup>24</sup> See the discussion of the early commitment of the army and the militia to protect against the Indians and the Militia Law of 1792 in Kreidberg and Henry, 1955, pp. 23–31.

<sup>25</sup> The Act of March 2, 1799, is presented as Appendix H in Gillett, 1981, pp. 211–212.



physician-general who shall be charged with the superintendence and direction of all military hospitals, and generally of all medical and surgical practice or service concerning the army and navy of the United States, and of all persons who shall be employed in and about the same, in camp, garrisons, and hospitals [and] an apothecary-general, and one or more deputies, . . . a purveyor, who shall be charged with providing medical stores, . . . a competent number of hospital surgeons, [and] a suitable number of hospital mates. (Gillett, 1981, p. 211)

As the emergency passed, Congress reduced the size of the Army. By March 1802, the Army consisted of only two infantry regiments and one artillery regiment, with an authorized medical staff of two surgeons and 25 surgeons' mates, "all to be attached to garrisons and posts" (Gillett, 1981, p. 130). As a result, in 1808, when an army detachment was sent to protect the city of New Orleans from a possible British invasion, "great mortality was suffered . . . by reason of an omission to organize the medical staff, and to establish a regular hospital department" (Ashburn, 1929, pp. 26–27)

### **The War of 1812**

When Congress declared war on Great Britain on June 18, 1812, "[n]either the Army nor the Army's medical support was ready for open hostilities" (Gillett, 1981, p. 148). It took nine months before Congress reestablished the posts of physician, surgeon, and apothecary general. The Army estimates that, during the three years of the war, 527,000 men served, but "not more than one soldier in twenty was actually present in the field for duty at any one time" (Sparrow, 1952, p. 4). While the militias provided their own surgeons, the Regular Army was responsible for medical supplies. The Medical Department was slow to expand, and the newly established medical districts worked independently. Friction between the regimental surgeons and those at the general hospitals added to the problems. On the northern frontier with Canada, where much of the action took place, disease again took its toll; one commander reported the troops were "very much sick and many have died since we came to this place" (as quoted in Gillett, 1981, p. 165). Without anesthetics, with limited knowledge of anatomy, and the constant fear of infection, surgery was kept at minimum. In the Northern Military District, 12,000 patients were admitted to military hospitals, but there were only seven operations, of which two were amputations (Ashburn, 1929, pp. 37–38).

The War of 1812 was perhaps most noteworthy for what the Army learned from the three years of war. During the war, the Army Medical Department was restructured. The regimental surgeons, while not officially part of the department, were required to submit monthly reports to the physician general and surgeon general, and starting in 1815, "regimental surgeons were made responsible for the continued training of their mates" (Gillett, 1981, p. 151). Over time, military hospitals became cleaner

and were more efficiently managed. In 1818, the Secretary of War, John C. Calhoun, finally establish a permanent peacetime Army Medical Department.<sup>26</sup>

### **The Indian Wars in the Southeastern United States**

The new Army Medical Department was organized to support a garrison Army of 7,000. At the start, the facilities available to accommodate the Army's sick often left much to be desired, even by the standards of the time. This was particularly unfortunate with continuing actions against the Creeks, Cherokees, Choctaws, and Chickasaws. Action against the Seminoles in Florida brought soldiers into areas where malaria was a big problem.<sup>27</sup>

The new Medical Department did make some improvements, by ending the divisions between regimental and hospital surgeons, controlling the system for the selection and assignment personnel, and establishing a clear command structure. These organizational improvements were not, however, matched by similar advances in medical science, which was still unable to deal effectively with the diseases that afflicted armies, particularly in hot climates.

### **The Mexican Wars**

The Mexican War of 1846 had the highest death rate of any ever fought by an American army, with an overall mortality rate almost twice that of the Civil War, four times that of the Spanish-American War, and almost seven times that of World War I (see Irely, 1972, p. 285).<sup>28</sup> At the start of the war, the Medical Department's one surgeon and 71 medical officers attended to a standing Army of 16,000 men; the department was not expanded until after war was actually declared. Eventually, 105,000 new men were "mustered" into federal service, and Congress authorized the Army to expand to 250 medical officers. Hospitals were staffed from the line regiments by those who took sick or who were unable to do full duty, or from the patients themselves.<sup>29</sup>

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<sup>26</sup> In the Department of the Navy, the Bureau of Medicine and Surgery was not established until August 31, 1842 (Sparrow, 1952, p. 14).

<sup>27</sup> According to Gillett, 1987, p. 58:

The conflict with the Seminoles was responsible for almost 1,200 of the 1,500 deaths occurring in the Army between mid-1835 and summer 1842. More than 75 percent of the military deaths in Florida, an average of 15 each month, resulted from disease. From 1835 through 1839, an average of almost 19 percent were sick at any one time. The disease rate increased when campaigning was continued throughout the summer.

<sup>28</sup> Ashburn, 1929, p. 58, says that "the amount of sickness and of death was that this war was four times as great as in the Spanish-American War."

<sup>29</sup> Major General Scott's General Order No. 123 of April 30, 1847, as quoted in Ashburn, 1929, p. 57, required "[e]very regiment that leaves wounded or sick men in a hospital . . . to leave a number of attendants, according to the requisition of the principal medical officer of the hospital, Those least able to march will be elected as attendants."



These new recruits were unprepared for a military campaign and “quickly transformed the camps into miasmic sink-holes of filth and squalor” (Irey, 1972, p. 286). As usual,

disease was invariably a more dangerous foe than the enemy. Malaria caused much illness, scurvy appeared from time to time, and measles and mumps afflicted volunteer units, but dysentery and diarrhea caused more difficulties than any other ailment. (Gillett, 1987, p. 101)

Of the more than 100,000 who responded to the call, no more than 14,000 were “assembled for battle at any one time” (Irey, 1972, p. 293). The killed in action (KIA) rate was 23.3 per thousand for the Army, which spent the most time in Mexico, and 9.96 per thousand for the volunteers. The death rates from disease told a different story. Despite the fact that the federal troops spent more time in the field in Mexico—on average, 26 months for the federal troops, compared to 15 months for volunteers—their losses were half those of the volunteers: 76.8 men per thousand compared to 148.8 per thousand men. Irey, 1972, p. 295, argues that “better personal hygiene and improved sanitary conditions in camp could have prevented many deaths from disease and illness.” So also could have proper medical care, but the doctors the states provided to care for the volunteers were “of questionable competence.” By one account, treatment of a gunshot wound ran from “amputations to milk and bread poultice” (Irey, 1972, p. 313).<sup>30</sup> For the first time ether was available as an anesthesia, but many surgeons chose not to use it, thinking that it contributed to the poor results. About 10 percent of the force was discharged for “disabilities.”

The Mexican War revealed many shortcomings that the Army addressed over time.<sup>31</sup> In 1855, the Surgeon General recommended increasing the number of medical officers, given the dispersion of army units over the new territories acquired from Mexico; enlisting hospital stewards as a permanent part of the Medical Department; and granting extra pay for those detailed from the line, in consideration of their heavy workload and “their frequent exposure to contagious diseases” (Ashburn, 1929, pp. 60–62). In August 1856, Congress approved these recommendations and, the following February (1857), gave medical officers the same military rank, pay, and privileges that other officers enjoyed.<sup>32</sup> In 1859, the Army introduced both two- and four-

<sup>30</sup> The poultice was applied to Captain Robert Anderson, as he reported in Anderson, 1911, p. 313. The poultice seemed to have worked because three weeks after being wounded, Anderson (pp. 316–317) wrote to his wife that “my wound is now nearly well; the new skin commenced forming over its edges yesterday, . . . [and the doctor said] he never knew a similar wound to heal as well and rapidly.”

<sup>31</sup> Garrison, 1922, p. 170, notes that “the lack of medical preparedness in the Mexican War was no worse than that in the Crimean . . . and was due to the lack of real knowledge of military sanitation at the time. There were no ambulances in the army before 1859.”

<sup>32</sup> The General Order of August 1846 confirmed naval ranks on doctors serving with the Navy (Sparrow, 1952, p. 14).

wheeled ambulances, which Ashburn, 1929, pp. 63, noted “were a long step in advance, as at that time even civil hospitals were not using ambulances.” Still, the Medical Department failed to learn the most important lessons from the Mexican War, lessons it would need to learn 20 years later as the nation entered the Civil War:

The Medical Department had no plans for meeting the supply and evacuation problems of a major conflict, or for systematically providing the physicians and hospitals needed to care for masses of casualties. And even if contingency planning had been customary for nineteenth century armies, no one could have predicted the size and extent of the ordeal to come. Unprepared even for a minor war, the Army Medical Department would inevitably be overwhelmed in the earliest months of the Civil War. (Gillett, 1987, pp. 148–149)

### **The Veterans of Both the War of 1812 and the Mexican War**

Care for the veterans of both the War of 1812 and the Mexican War followed the model established for the Revolutionary War. Pensions for service-connected disabilities were granted immediately, with service pensions coming many years later—in the 1870s and 1880s, respectively—when the numbers of living veterans had decreased to the point that the costs were minimal.

### **The Legacy**

The American system of care that evolved in the years before the Civil War was firmly rooted in the European traditions from which the United States itself had evolved. Many American physicians and surgeons were trained in Europe, and those who did not go abroad to study read from European texts.

The fledgling Army Medical Department, which expanded and then contracted after each war, was a reflection, albeit somewhat delayed, of the European experience. For veterans, disability medical pensions and hospitals to care for the medically indigent followed the European model, but with one exception: Congress tended to be more generous than its European counterparts. A number of factors may account for this. First, the rapidly expanding American economy, protected by a series of tariffs, generated large surpluses, which Congress spent on numerous pork-barrel projects, as well as on benefits for disabled and nondisabled veterans. Second, some politicians tended to use the public purse to benefit constituents in return for political support, either in the form of campaign contributions or votes, resulting in waves of legislation that benefited veterans. During the first half of the 19th century, payments not only increased but so did the total number of veterans eligible to receive some form of compensation as Congress extended benefits to the nondisabled but aging men who had served. This pattern repeated itself after the Civil War and well into the 20th century.



## The Civil War

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The Civil War drew heavily on the manpower resources of the country. On the eve of the war, the Regular Army numbered about 15,000 officers and men. This grew sharply over the ensuing months and years. By one account, “nearly one-half of the men eligible for service in the North . . . enlisted . . . in the Union forces” (Sparrow, 1952, p. 5).<sup>1</sup> In 1868, the Adjutant General reported that a total of 2,336,942 white or “colored” men had enlisted or were commissioned (2,073,112 white enlisted men; 83,935 commissioned officers; and 178,895 colored enlisted men) in the Union Army (Woodward, 1870, p. xxxix).<sup>2</sup> Less-reliable figures place the number serving in the Confederate Army between 600,000 and 1 million.<sup>3</sup> Regardless of the exact numbers, the immediate impact of the war on the able-bodied men of military age was horrendous: On the Union side more than one in ten died or were incapacitated; on the Confederate side, the numbers were even worse, one in four (Bollet, 2002, p. 435).

### A New Kind of War

To a great extent, a soldier of the Revolutionary War would have felt very much at home in a Civil War unit. This account of the life of a Civil War soldier could just as well be written about the life of his grandfather during the Revolution:

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<sup>1</sup> Skocpol, 1992, p. 103, estimates the number to serve in the Union army to be 2,213,000 men and reports that this constituted “37 percent of the northern men between the ages of 15 and 44 in 1860.”

<sup>2</sup> The number of soldiers in the army at any single point in time was far less. The Union Army never had more than 700,000 in the field at any point during the war. Adkins, 1967, p. 50, attributes the limited effective strength of the Union Army to short terms of service, large numbers of disability discharges, heavy casualties, and desertions, which numbered almost 200,000—16,000 from the Regular Army and 183,000 from volunteer units.

<sup>3</sup> Cunningham, 1958, p. 3, cites Joseph Jones, “one of the most outstanding Confederate States medical officers” as estimating more than 600,000 fighting men were mobilized and 200,000 were either killed outright or died from their wounds. Glasson, 1907, p. 42, places the figure at about 1.1 million. The records of the Confederate Medical Department did not survive the siege of Richmond in April 1865, and it is generally accepted that no definitive estimates exist (Livermore, 1901, p. 1).

The life of a soldier . . . was difficult and for the thousands of young Americans who left home to fight for their cause, it was an experience none of them would ever forget. Military service meant many months away from home and loved ones, long hours of drill, often inadequate food or shelter, disease, and many days spent marching on hot, dusty roads or in a driving rainstorm burdened with everything a man needed to be a soldier as well as baggage enough to make his life as comfortable as possible. There were long stretches of boredom in camp interspersed with moments of sheer terror experienced on the battlefield. For these civilians turned soldiers, it was very difficult to get used to the rigors and demands of army life. (Heiser, 1998)

Initially, the soldiers of both North and South were caught up in the euphoria of a military campaign.<sup>4</sup> They had little regard for the discipline of army life, which was reflected in the slovenliness of their camps and their lack of discipline under fire. For the Northern soldier, all this started to change after the Union loss at the first battle of Bull Run. They learned, as Washington had after the defeats of 1776 and 1777, that only men who knew how to fight could win the war. As it had at Valley Forge, drilling on battle techniques became a major camp activity.

The arms that most soldiers carried during the Civil War were an improved, mass-produced, rifled version of the familiar muzzle-loading musket carried by the Continental soldier almost a century before. It has long been assumed that the increased range produced very high casualty rates,<sup>5</sup> but more recent studies suggests that this may not be so. Hess argues that the “operation of the battle line . . . [was] affected comparatively little by the use of the rifle, mostly because the Civil War soldier never utilized the long-range capabilities of their new weapon,” (Hess, 2008, p. 4) and the major battles of the 18th and early 19th centuries had “loss ratio[s] at least as high as that of the Civil War” (Hess, 2008, p. 198).

The Civil War was different from the Revolution in at least one respect, the scale of operations. At the battle of Yorktown, which ended the Revolution, some 29,000 American, French, and British troops were engaged. At the battle of Gettysburg, the North and South fielded over 160,000 troops. Moreover, the new technologies of the steamship and the railroad that made a long-range, wide-scale campaign possible. The great battles of Antietam and Gettysburg, which ended General Robert E. Lee’s excur-

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<sup>4</sup> The Army’s history of mobilization recounts that, “in the first enthusiasm in the North which followed the President’s first two calls for Militia and Volunteers, states frequently organized more units than their quota” (Kreidberg and Henry, 1955, p. 99). In the spring of 1862, the Confederate Congress passed the first national conscription law (Moore, 1924, p. 354). This was followed a year later by the Union’s Enrollment Act, which asserted for the first time the federal government’s authority to directly draft people into a national army, thereby bypassing the states and the militia (Rostker, 2007a, p. 16).

<sup>5</sup> The military historian Trevor Dupuy makes the case that the Civil War was a “revolution in weaponry and tactics which, although not perceived by European soldiers, was to come to bloody fruition in 1914” (Dupuy, 1980, p. 196).

sions into the North, were a year apart, in 1862 and 1863. General Ulysses S. Grant's grand strategy for the Army of the Potomac in 1864—attack, attack, and attack—meant that battles were only days apart. In 1864, even as his Army of the Potomac lost more men than the Army of Northern Virginia, Grant pressed the attack at the battles of the Wilderness (May 5–7, 1864), Spotsylvania Court House (May 8–21, 1864), and Cold Harbor (June 1–3, 1864) and then laid siege to the Confederate capital of Richmond from Petersburg from June 9, 1864, to March 25, 1865.

While 94,000 Union soldiers were either KIA or later died of wounds, 204,000 survived their wounds, and 165,000 eventually returned to duty. By the end of the war, the Union Army had issued 224,000 Surgeon's Certificates of Disability, the vast majority of which were for noncombat reasons (Woodward, 1870, Tables CI and CXI, p. xxxviii). The Union Army also suffered 186,216 deaths from disease.<sup>6</sup> In total, 14 percent of those who served died from battle wounds, disease, or other nonbattle causes. An additional 10 percent were discharged for battle and nonbattle medical reasons.<sup>7</sup> This was a huge challenge for the fledgling U.S. Army Medical Department and a tremendous burden on the nation, which was committed to caring for its war veterans. However, over the course of the war, the medical care that both Union and Confederate casualties received steadily improved such that, by the end of hostilities, the new system of battlefield care became the prototype for battlefield medicine for the great wars of the 20th century. By the end of the war, the military medical system was “achieving survival rates for disease and wounds not known in previous wars” (Bollet, 2002, p. xiii).<sup>8</sup> How this was accomplished and how the nation met the challenges of caring for the veterans of the Civil War is the focus of this chapter.

## The U.S. Army Medical Department Goes to War

While the Army Medical Department eventually grew to more than 12,000 physicians,<sup>9</sup> when the conflict broke out the Union Medical Department consisted of the Surgeon

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<sup>6</sup> The Army's definitive account, *The Medical and Surgical History of the War of the Rebellion*, has an extensive discussion of the difficulties of accurately counting medical casualties. The numbers the Army reported are “at least” counts, with the true number undoubtedly much higher. The count used here comes from the Adjutant General's office and is dated October 25, 1870, as reported in Woodward, 1870, p. xxxvii. Also see Faust, 2006.

<sup>7</sup> Confederate forces suffered 94,000 battle deaths, and 60,000 deaths from other causes. An estimated 100,000 wounded soldiers survived the war (Adkins, 1967, p. 49).

<sup>8</sup> Bollet, 2002, p. xv, highlights the “greatly improved ambulance vehicles, the use of boats and trains to transport sick and wounded comfortably, a trained ambulance corps, a field hospital system to care for the wounded near the battlefield, and the establishment of huge, highly organized, well-managed military hospitals.”

<sup>9</sup> Initially, regimental surgeons that accompanied the troops that were supplied by the states, and civilian contract surgeons augmented Regular Army surgeons (Adams, 1996, p. 9). Eventually, there were 547 surgeons and assistant surgeons of volunteers, 5,990 regimental surgeons and assistants, and 5,617 acting staff surgeons and

General, 30 surgeons, and 83 medical assistants. At the time, there was only one army hospital with a capacity of more than 40 beds. In 1861, the Medical Department was “ill-prepared, disorganized, poorly supplied, and ineptly led by senior medical officers marked by their dogmatism, penny-pinching, and resistance to change” (Greenwood and Berry, 2005, p. 17).<sup>10</sup> Moreover, the general condition of medicine in the United States at that time, which the Army drew from, was not much better. On the eve of the Civil War, according to one scholar

the American practice of medicine had become a hodgepodge of therapeutic philosophies colored by a growing skepticism in matters clinical. . . . Ultimately, the carnage of the Civil War would prove an enormous emotional and physical burden for the poorly educated, inadequately trained, and ineffectually organized physicians of that era. (Rutkow, 2005, p. 65)

Against these inadequacies were rising public expectations about proper military medical care, which reflected the improvements in the care that British soldiers received in the latter part of the Crimean War of 1853–1856.<sup>11</sup> The exploits of an English nurse, Florence Nightingale, and the British Sanitary Commission were well known to Americans—“a household word wherever the English language is spoken”<sup>12</sup>—and had set a new standard.

The American counterpart, the U.S. Sanitary Commission,<sup>13</sup> shared a name and had similar convictions but did not share the same powers. It had to overcome sub-

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acting assistant surgeons for a total of 12,242, “or roughly 6 per 1,000 men” (Ashburn, 1929, p. 88). When the war ended, the Army Medical Department was authorized 170 positions.

<sup>10</sup> The head of the Sanitary Commission noted that, before the war, medical officers were

scattered at isolated points on the frontier, without access to books, having no contact with their professional brethren in civil life, and with very little opportunity while their duties confined them to the medical care of a single company of soldiers, of improving themselves in a knowledge of that science; . . . complete stagnation in respect of everything which could simulate a true professional zeal. (Stille, 1866, p. 117)

<sup>11</sup> The final report of the U.S. Sanitary Commission recounts the role that the British experience in the Crimean War played:

[It] taught . . . the terrible dangers which encompass all armies outside of the battlefield, the possibilities of mitigating them, and the sanitary measures, which in strict accordance with the general laws of health should be adopted to provide for the safety of an army. . . . They found, too, that the medical staff, however, much it might deplore the evil, was helpless to effect a remedy, for under the existing system it had no power to initiate, order and execute sanitary works. (Stille, 1866, p. 29)

<sup>12</sup> According to Forman, 1864, p. 3:

The first organized attempt to mitigate the horrors of war, to prevent disease and save the lives of those engaged in military service by sanitary measures and a more careful nursing of the sick and wounded, was made by a commission appointed by the British Government during the Crimean war, to inquire into the terrible mortality from disease that attended the British Army at Sebastopol, and to apply the needed remedies.

<sup>13</sup> No equivalent existed in the South. According to Lewis, 2009:

While women of the South often sent supplies to help the Confederate troops, including medical supplies, and while there were nursing efforts in the camps, there was no organization in the South of any similar objective



stantial opposition from the Army Medical Department and the Department of War. Created by executive order in June 1861, in the face of opposition from the leadership of the Army, the commission was a government-sanctioned body, funded entirely through private donations. The Sanitary Commission independently developed advice from its inspections of military medical activities and provided this advice to the Army, along with medical supplies and equipment purchased from donations. The commission had no official authority to enforce its advice or to compel the use of its supplies and equipment, but it played an important part in shaping the medical care Union soldiers received and was a power in shaping the Medical Department itself.

### **The Sanitary Commission Helped Shape the Union Medical Department**

The same month that Confederate shells fell on Fort Sumter (April 1861), South Carolina, a delegation from New York made up of members of the Association of Physicians and Surgeons, and the New York Medical Association went to Washington to, in the words of one of its members, “learn definitively . . . in what way, if at all, . . . [they] could be best made available for the relief of the army” (Stille, 1866, p. 46). They proposed a commission modeled after the British Sanitary Commission with plenary powers but had to settle for “merely [an] advisory position towards the Medical Bureau” (Stille, 1866, p. 50). The commission was authorized by Congress on June 9, 1861; the President approved its constitution on June 13, 1861.

The Medical Department, and particularly Secretary of War Edwin M. Stanton, resented and opposed the commission from the start. Relations between the commission and the Department of War were not helped when members of the commission went over Stanton’s head to lobby Congress for reforms,<sup>14</sup> which took the form of the April 1862 Act to Reorganize and Increase the Efficiency of the Medical Department of the Army. The act provided for merit promotions in the medical corps, rather than the promotion by seniority that had been the norm; increased the department’s size; and created a number of new positions. The Sanitary Commission also lobbied President Lincoln for the appointment of a new Surgeon General. On April 25, 1862, over Stanton’s objections and skipping over many more-senior officers, Lincoln appointed Dr. William A. Hammond to be Surgeon General, remarking that “it was impossible to resist the weight of evidence in his favor, given by the Medical profession of the whole country” (Stille, 1866, p. 134).<sup>15</sup>

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and size to the U.S. Sanitary Commission. The difference in death rate in the camps and the ultimate success of the military efforts was certainly influenced by the presence in the North, and not in the South, of an organized Sanitary Commission.

<sup>14</sup> The Sanitary Commission’s campaign for reform is discussed in Adams, 1996, pp. 24–31.

<sup>15</sup> Almost 100 years later, during World War II, the medical profession again swayed a President to select their choice for Surgeon General, putting aside the recommendations of the professional military establishment.



Despite support from Lincoln, the commission's relations with the Department of War were always strained,<sup>16</sup> even as its relations with the field commanders were outstanding. Stille noted after the war that high-ranking military officers

who had had the best opportunities of observing its practical usefulness never withheld that support and sympathy. It is a noteworthy fact that every General in command of an Army during the war, has placed on record an expression of his appreciation of the value of the Commission's services to his troops, while very many of them actively aided and encouraged its operations by all the means at their disposal. (Stille, 1866, p. 509)

### **The Field Organization of the Union Army and the U.S. Sanitary Commission**

The inadequacy of the Medical Department during the first year of the war was amply illustrated by the disaster at the first battle of Bull Run (July 21, 1861):

An incompetent Union surgeon general, accustomed to a small pre-war frontier army, decided to wait until there was actual fighting before preparing for casualties. None of the wounded reached Washington in an ambulance the day of the battle. . . . When they arrived in Washington, the medical system was not prepared to receive them. . . . Makeshift "hospitals" [were] set up in dilapidated warehouse, churches, schools, and public buildings. . . . [In the spring of 1862, during the Peninsula Campaign,] the Union Medical Corps had barely changed. (Bollet, 2002, pp. 2–3)

Things changed under the reforms initiated by Surgeon General Hammond, and the medical care a wounded soldier received started to follow the echelonment of the Army as patients moved from field stations to field hospitals, to division or corps hospitals, then to hospitals in major Army centers in nearby cities. If a battle produced more casualties than regimental facilities could handle, a temporary field hospital manned by regimental surgeons was established. Brigade and division hospitals were sometimes set up to consolidate regimental hospitals. These were hybrids "between the regimental and general hospital, more permanent than the former but less so than the latter" (Gillett, 1987, p. 157). The Medical Department reinstituted the general hospital in the major cities of the North to handle the vast numbers of sick and wounded that flowed

<sup>16</sup> The Army's History of the period notes:

Despite the demands of the war, however, [Secretary of War] Stanton had apparently concluded that the department's network of medical inspectors could handle their responsibilities without the aid of Sanitary Commission inspectors. . . . The refusal to continue the Sanitary Commission's right to inspect hospitals and camps at the end of 1864 represented a general deterioration in its relationship with the Medical Department. . . . In the spring the secretary of war for a time even refused to issue the passes commission representatives needed to move freely in the area where the Army of the Potomac was operating, making it impossible for them to deliver supplies during the battles of the Wilderness and Spotsylvania. Stanton also denied the Sanitary Commission the right to use the adjutant general's records in compiling its directory of Army patients and their locations. (Gillett, 1987, pp. 231–232)

from the regimental hospitals, with the first general hospitals established in Washington, D.C. The movement of patients was matched by improved management of the medical staffs with “surgeons, nurses and cooks . . . [meeting] patients at each stage of their journey and the required food, medicine, and supplies . . . usually available at predetermined depots” (Bollet, 2002, p. 22).

Despite these changes, the realities of battle often overwhelmed the new system. The Civil War was made up of hundreds of small battles punctuated by a small number of great battles, and the Sanitary Commission observed that the

wants of the wounded were neglected after the great battles, not through any fault of the Surgeons, but because the Medical Department had no control whatever over the means of transporting the supplies necessary to relieve them. The want of independent means of transportation continued to embarrass the action of the Medical Department in the field throughout the war. (Stille, 1866, p. 270)

The scope to which the great battles pressed the resources of the Medical Department can be seen from this description of the battle of Antietam in September 1862:

The battle was fought on the 17th of September, 1862, and resulted in leaving on our hands nearly ten thousand of our own wounded, besides a very large number of the enemy, abandoned by his defeated and retreating army. Hospital accommodation of the rudest form could not be provided for any considerable number of these sufferers, and after every house, and barn, and church, and building, for miles around had been appropriated for the use of the wounded, many remained shelterless in the woods and fields, for want of tents. The number of Surgeons was wholly insufficient for the demands upon them, and until they were reinforced by Medical men in civil life, who came from all parts of the country and volunteered their services, the condition of the wounded whose first wants had not, in many cases, been attended to for days after the battle, was most distressing. (Stille, 1866, pp. 263–264)

During and after the battle of Antietam, the commission provided material support assistance to the Medical Department from its own stores, using its own transportation. Antietam proved the model on which the Sanitary Commission’s Field Relief Corps was later deployed.

This is not to say that the Medical Department did not learn and improve, but at Antietam, they were up against what has been described as “America’s bloodiest day.” Bollet notes that, at the battle of Antietam, the influence of the Army of the Potomac’s new medical director, General Jonathan Letterman, could be seen as “stretcher bearers now removed the wounded from the front line and took them to regimental assistant surgeons located just behind the front lines. These surgeons triaged the wounded, stopped bleeding, administered opiates, and dressed wounds. Trained ambulance attendants then moved the wounded to field hospitals set up in existing buildings or tents just beyond artillery range” (Bollet, 2002, p. 3).

At the battle of Fredericksburg (December 11–15, 1862), just three months later, the Commission reported:

The Ambulance Corps . . . was distinguished by a zeal, devotion, and success in the particular work assigned it. . . . the Medical Purveyor's stores were kept constantly replenished, and in no considerable battle of the war was so complete a system of caring for its victims, so thoroughly organized. . . . [An inspection of the hospitals] found that they had nearly all been amply supplied. (Stille, 1866, pp. 368–370)

Arguably the best test of Letterman's innovation came at the battle of Gettysburg (July 1–3, 1863), when over 14,000 Union soldiers and the 7,000 Confederate wounded left behind by Lee's retreating army overwhelmed the system. For the wounded of the Army of the Potomac's Twelfth Corps, the system worked well. The corps surgeon reported to Letterman that the ambulance and field hospital system "remove[d] the wounded from the field, shelter[ed and fed them], and dress[ed] their wounds within six hours after the battle ended, and . . . every capital operation [was] performed with twenty-four hours after the injury was received" (Patterson, 1997, p. 13). But that was the exception and came about only because "the [medical] director of the unit . . . had failed to obey orders, . . . [and] the corps supply wagons had not been sent to the rear" (Patterson, 1997, p. 13).<sup>17</sup> When the elements of Letterman's system were not there, the task was "staggering." By one account, "the period of ten days following the battle of Gettysburg was the occasion of the greatest amount of human suffering known to this nation since its birth" (Patterson, 1997, p. 4).

### **The Need for More Medical Personnel**

The Army's animosity toward providing the personnel required to properly staff military hospitals was expressed in August 1862 by General Henry Halleck, the General-in-Chief of all U.S. armies, when he was asked to comment on a proposal to establish a Hospital Corps.<sup>18</sup> He wrote:

Our armies are already much too large and [it would] very seriously impede the movement of our troops in the field. . . . The presence of noncombatants on or

<sup>17</sup> On June 19th, Letterman had protested Major General Joseph Hooker's decision to cut the number of medical supply wagons from six per division to two per division. When Major General George Meade took over command of the Army of the Potomac just days before the battle, he was "not sure that he would be able to hold his position, [and] ordered that corps commanders send to the rear all their trains, excepting ammunition wagons and ambulances. . . . The canvas tents were particularly missing, hundreds of which were packed away in the absent supply wagons" (Patterson, 1997, pp. 10–11). The first supplies to reach the battlefield were those provided by the Sanitary Commission two days after the battle. The situation worsened when General Meade ordered 544 of the 650 doctors under his command (85 percent) to leave Gettysburg and rejoin the Army as it pursued Lee (Patterson, 1997, p. 46). The 106 Union doctors, augmented by the doctors Lee had left behind to care for those of his wounded who could not travel, were overwhelmed. Patterson suggests that, in "proportion to the number of wounded, . . . [Lee] had probably left more doctors [behind] than General Meade" (Patterson, 1997).

<sup>18</sup> It would take another 35 years before Congress authorized a dedicated Hospital Corps on March 1, 1887.

near the field of battle is always detrimental. Medical soldiers would not obviate the necessity of sending fighting soldiers from their ranks with their wounded, for the former would seldom be near enough to the enemy to perform that duty. The soldier can be very much relieved by hiring cooks, nurses and attendants in hospitals, whenever the circumstances will permit; but I see no advantage in having them enlisted for that purpose. . . . [The establishment of a Hospital Corps would] increase the expenses and immobility of our Army by adding to it a large corps of noncombatants, without any corresponding advantage. (as quoted in Lynch, Weed, and McAfee, 1923, p. 86)

The negative attitude about authorizing a dedicated military staff to care for the sick and wounded notwithstanding, casualties increased, and hospital populations swelled to unprecedented levels. There were numerous cases of line soldiers being

retained for many months in hospitals . . . when they were perfectly able to serve with their own organizations at the front. . . . [This was] to the very great detriment of the line, because of the inroads on strength and also because of its bad influence on morale. (Lynch, Weed, and McAfee, 1923, p. 45)

Eventually, convalescent camps were established so that the soldiers almost ready to resume their duties could be transferred out of the hospitals without actually being discharged to their units. By spring 1863, shortages of nurses led the Army to take steps to employ both the chronically ill and those permanently crippled to work in hospitals as attendants, clerks, cooks, and guards. Department of War General Order 105 of April 28, 1863, revived the Revolutionary War's Invalid Corps.<sup>19</sup> In October 1863, the Acting Surgeon General reported that the experience so far "warrants the belief . . . [the Invalid Corps] will prove the most economical and advantageous mode of supplying a permanent corps of nurses and attendants . . . making available for active service the able-bodied hitherto detailed for these duties."<sup>20</sup> Renamed the Veteran Reserve Corps in 1864, the majority of the officers transferred to it were disabled because of gunshot wounds, but the majority of enlisted men transferred were suffering from chronic disease, chiefly diarrhea (Smart, 1888, p. 28).

Since those transferred to the Veteran Reserve Corps had no training in the care of the sick and many were sick themselves, their usefulness was limited. Moreover, as Bollet, 2002, p. 405, notes, "if a soldier-nurse learned his tasks and began to do them well, he was usually declared healthy and transferred back to active duty." In addition

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<sup>19</sup> Between 1863 and 1866, more than 60,000 Union soldiers served in the Veteran Reserve Corps. The corps formed two "battalions," the first for those who could bear arms and perform garrison duty and the second for the severely handicapped, fit only for hospital service. It was disbanded in 1866. However, four regiments of "Veteran Reserves were incorporated with the Regular Army" (Otis, 1870, p. xviii). The Confederacy established an Invalid Corps in 1864, in which officers and men disabled in the line of duty had to serve if they wished to receive pay. See also Cimbala, 2012, pp. 5–27.

<sup>20</sup> Taken from the annual report of the Surgeon General, as reported in Bollet, 2002, p. 430.

to the Veteran Reserve Corps, others provided the skilled personnel to tend the sick and wounded. The Sanitary Commission established the Auxiliary Relief Corps to look after the “wants of the wounded sent to the Hospitals after an engagement and left behind by the Army on its onward march” (Stille, 1866, p. 273). Most notable was the increase in trained women nurses that transformed the delivery of care both during the war and after.

Before the Civil War, there were few trained nurses in this country and none in the Army. During the war, both the Sanitary Commission and the Army trained and deployed female nurses. Following the lead of Florence Nightingale, the Sanitary Commission recruited the first group of 100 women for three months of training at New York’s Bellevue Hospital. On April 12, 1861, Dorothea Lynde Dix was appointed Superintendent of Women Nurses for the Union Army, with authority “to select and assign women nurses to general or permanent military hospitals” (U.S. Army Medical Department, 2011, p. 3). During the war, approximately 3,200 served as contract nurses with the Union Army (Sarnecky, 1999, p. 13). An additional 15,000 women served with less-formal arrangements at the smaller hospitals and near battlefields; others, like Clara Barton,<sup>21</sup> worked independently of Dix, providing “humanitarian comforts and supplies” (Sarnecky, 1999, p. 21). The terms “battle nurse” and “daughter of the regiment” were often given to those recruited directly by regiments (Bollet, 2002, pp. 405–433). Religious orders, such as the Sisters of Charity, also provided nurses. By the end of the war, female nurses had become so indispensable that, within a decade, a permanent nursing school was established in New York City.

## Innovations in Care for the Union Wounded

During the Civil War, a number of innovations improved general care for Union troops wounded in battle and formed a foundation on which future military medicine would build.

### Military Hospitals

An innovation during the war that would carry over into postwar care of veterans was the establishment of large-scale military hospitals. The Sanitary Commission noted that, previously, “no such establishment as a general hospital existed in the army; the military hospitals were all post hospitals, that at Fort Leavenworth, the largest, contained but forty beds” (Stille, 1866, p. 118). By war’s end, the Union operated 192 general hospitals with a total capacity of 118,409 beds.<sup>22</sup>

<sup>21</sup> Oates, 1994, provides a compelling description of Barton’s remarkable life.

<sup>22</sup> According to the hospital census of December 17, 1864, there were 192 general hospitals with a total capacity of 118,409 beds with 71 percent of beds occupied. There were 35 general hospitals with more than 1,000 beds; of

At the beginning of the war, the Sanitary Commission urged the construction of hospitals “instead of collecting the sick and wounded in hotels and other rented buildings which were generally ill-adapted for hospital purpose” (Smart, 1888, p. 917). Nevertheless, the first military hospitals that were opened in Washington in May 1861 used not only the cities’ existing hospitals but also hotels, churches, and warehouses, as well as “the Capital and Patent Office, . . . Saint Elizabeth’s Insane Asylum and . . . many private residences” (Smart, 1888, p. 897).<sup>23</sup> By April 1862, the first of scores of new hospitals especially constructed to receive large numbers of military casualties was opened.<sup>24</sup> Looking back over the war, the Sanitary Commission called the military hospital construction program

one of the noblest triumphs of the war, . . . on a scale unprecedented in history, not only in their vastness, but in their fulfillment of all the requirements of humanity and science. . . . [It resulted in] a far lower rate of mortality here during the war than has ever been observed in the Military Hospitals of other countries. (Stille, 1866, p. 95)

There were no provisions, however, for “reconstruction, reconditioning and rehabilitation” of wounded soldiers in Civil War hospitals. “Convalescents in a ward were frequently rated as nurses until they were able to bear the fatigues of active service, . . . [as were] details from the Veterans Reserve Corps” (Smart, 1888, p. 957). By one account, “five nurses, with help from convalescents” were sufficient to care for 50 patients “of an acute character.” Convalescents were also used as kitchen helpers, as well as “for guard and general police duties.”

### **Convalescent Camps and Provision of Ancillary Services**

For soldiers who were returning to their units, the Army set up convalescent camps. The camps are of particular interest because similar institutions were established during World War I and World War II. Warrior Transition Units in today’s Army perform much the same function. These units were

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these, seven contained more than 2,000 beds and three more than 3,000 beds. The largest general hospital was at Fort Monroe, near Hampton Roads, Virginia, with a capacity of 3,497. The general hospitals in the Philadelphia area had 12,401 beds, and those in the Department of Washington had a capacity of 21,426, with an occupancy rate of 65 percent at the time of the census. These figures were tabulated from data presented from tables showing statistics from individual general hospitals in the several military departments presented in Smart, 1888, pp. 960–964.

<sup>23</sup> Across the Potomac River in Alexandria, Virginia, “hospitals were organized in abandoned dwellings, warehouses, churches, seminaries, etc., the whole constituting the three divisions of the General Hospital of that place” (Smart, 1888, p. 897). By the end of the war, 4,615 Union soldiers were hospitalized in Alexandria.

<sup>24</sup> An extensive discussion of the changing hospital styles and construction can be found in Woodward, 1870, pp. 897–955.



neither Hospitals nor Camps, but partook of the nature of both, and forced a sort of halting-place for the soldiers midway between them. They received men from the Hospital who had so far recovered as no longer to need medical treatment, but who were yet not well enough for active service in the field. These men remained in the Convalescent camps until they regained their strength, or it became apparent that they were wholly incapable of further service, and . . . discharged as disabled. . . . In the course of time, however, these camps became general rendezvous for the distribution of troops, to which were sent not only convalescents from Hospitals, but recruits to fill up the old Regiments, substitutes, stragglers of all kinds, deserters, and the large class of men who were found by the Provost Marshall's guard wandering away from their proper commands without permission. [Between] 1863 and 1864, more than two hundred thousand such men passed through a single one of these Convalescent camps, that in the rear of Alexandria [Virginia]. (Stille, 1866, p. 301–302)

The Sanitary Commission provided a wide range of services for men in the convalescent camps and for those who had been discharged. The work of their Special Relief Corps established what today might be called a transient center to provide care for individual soldiers on the move, soldiers who were left behind as their units moved on, returning prisoners of war, and support for discharged soldiers. During the war, the commission maintained 40 homes or lodges scattered throughout the country and feeding stations for the “care and feeding of wounded men *en route* from the battlefield to distant General Hospitals” (Stille, 1866, p. 298). By the war's end, they had provided “four million five hundred thousand meals . . . for sick and hungry soldiers” (Stille, 1866, p. 290).

### Shift in Focus

As a result of the Civil War, the focus of military medical care shifted from the regiment to the division and army. In the early days of the war, the call-up of state militias meant each state provided the medical staff of each regiment, with the result that these small regimental hospitals often became “overwhelmed with their own men, turning away those from other regiments” (Bollet, 2002, p. 3). Soon, hospital tents and medical supplies were issued to brigades and divisions, and overall responsibility for the care of the sick and wounded was elevated with the establishment of the position of the field army medical director, i.e., the Medical Director of the Army of the Potomac. When the sick and wounded were moved to the large general hospitals in northern cities, they became the responsibility of the Surgeon General. In the east, this teamed Surgeon General Hammond with the Medical Director of the Army of the Potomac, Jonathan Letterman.<sup>25</sup> Looking back on the work they did in a little over one year, Ashburn,

<sup>25</sup> Three months after becoming Surgeon General, Hammond appointed Letterman to be the Medical Director of the Army of the Potomac. The animosity between Secretary of War Stanton and Hammond came to a head in August 1863 when he was ordered out of Washington. He was court-martialed on charges of corruption and

1929, p. 86, in his *History of the Medical Department of the United States Army*, called them “the two greatest medical officers of the Civil War. Both were appreciated at the time by the Sanitary Commission, [and not by the Secretary of War or the ‘old guard’], both are now great men to the Medical Department.”

Under the system they developed, small aid stations were set up near the battlefield, and evacuation hospitals were established at rail depots and near waterways. The use of tents, rather than local buildings, to house hospitals offered many advantages. Rather than the usual haphazard approach to providing hospital attendants, nurses, clerks, and guards, standardized staffing models were developed that provided for

every 1,000 patients . . . a staff of 20 ward-masters, 100 nurses, 5 or 6 cooks, 8 to 10 assistant cooks, 4 or 5 launderers with occasional assistants, 3 or 4 bakers, 10 to 15 men to run the stables and shops, 3 or 4 more men to manage the morgue and cemetery, 10 in the headquarters and library, about 15 physicians. (Gillett, 1987, p. 290)

### Medical Evacuation—Ambulances, Trains, and Ships

Today, Letterman is remembered most for his innovations in the area of medical transportation. Traditionally, the most unfit soldiers were detailed to drive ambulances and carry litters; as a result, many soldiers died on the field of battle. Letterman developed plans for the Army’s first formal ambulance corps for the Army of the Potomac.<sup>26</sup> Responsibility for ambulances was taken from the Quartermaster Department and given to the Medical Department. Since it had been common for ambulances to be commandeered as baggage carts by officers, General McClellan’s General Order of August 2, 1862, stipulated that

noncommissioned officers in charge . . . [would] be held responsible that they are used for none other than their legitimate proposes, . . . officers in charge [were to] remove anything not legitimate . . . [and] leave it on the road, and . . . any attempt by a superior officer to prevent . . . [this should be] reported to the medical director . . . [and the] officer offending [be placed] in arrest for trial for disobedience of orders. (McClellan, 1862)

As reported to the Secretary of War, the plan specified that two men and a driver, plus two stretchers, be on board each ambulance. Each regiment was supplied with two

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dismissed from the Army a year later. It was widely believed that the fall of Hammond precipitated Letterman’s decision to leave the Army in January 1864. Congress later annulled Hammond’s court-martial conviction, and he was made a brigadier general on the retired list in 1878. Letterman did not live to see that day, having died in 1872 (Ashburn, 1929, pp. 84–86).

<sup>26</sup> Stanton rejected Hammond’s request for an ambulance corps for all Union armies, so Letterman’s efforts, while affecting only the Army of the Potomac, were in direct contradiction of the position the Secretary of War had taken (Adams, 1996, pp. 32–33).



light, two-horse ambulances, and each corps another two, to provide evacuation from field to depot. Four-horse vehicles carried patients back to field hospitals and beyond. The new system was not without its critics. Secretary of War Stanton rejected this plan because, in his view, it “increase[d] the expenses and immobility of our army . . . without any corresponding advantages” (Gillett, 1987, p. 191). However, on March 30, 1863, General Grant adopted this system, for the western armies under his command, over the objections of the War Department, and on March 11, 1864, Congress established a uniform system of ambulances for all Union forces. Letterman’s innovation had a profound effect on the care the wounded received on the battlefield and became the model well into the next century.

Hammond and the Sanitary Commission were responsible for the other great medical evacuation innovation of the war: the use of trains and ships. In the early days of the war, the wounded were moved to general hospitals in the rear in whatever rolling stock was available, usually freight cars. In the summer of 1862, the Sanitary Commission gave the Army the first railway cars designed to carry wounded soldiers. Within months, there was

regular daily hospital train service . . . between Washington and New York, and within two weeks after the battle of Gettysburg . . . three fourths of the wounded had been removed to general hospitals. . . . Altogether hospital trains carried 225,000 patients during the war. (Ashburn, 1929, p. 81)

During the Peninsula Campaign in the spring of 1862, the first hospital ships, also provided by the Sanitary Commission, were used to transport patients back to Washington. They generally lacked food and water and had no sanitary facilities. Soon, however, hospital boats specially designed to carry the sick and wounded were moving patients on the western rivers and along the coast. “These boats had rows of beds, good sanitary facilities, elevators to move men between decks, operating rooms, special diets kitchens, and usually, some female nurses” (Bollet, 2002, p. 4). When General Sherman’s army arrived in Savannah just before Christmas 1864, it was met by “four first class steamers carrying supplies for five thousand beds” (Ashburn, 1929, p. 89).

By the end of the war, during the Siege of Petersburg (June 1864–April 1865), these new transportation systems came together, as Bollet, 2002, p. 5, reports:

The transportation and treatment of the wounded had advanced far beyond its shaky beginnings. A railroad line ran parallel to the Union trenches, and wounded men were treated right behind the lines and then moved by rail to a large tent hospital at City Point. . . . Convalescents were moved by boat to northern cities.

### **Other Reforms by Surgeon General Hammond**

The tenure of William H. Hammond as Surgeon General is noteworthy not only for the general reorganization of the Medical Department but for a number of other

reforms that were important not only during the war but for years after. He established a system of medical records that reported fully on the sick and wounded, including the nature of wounds and the dispositions of cases. Autopsies were reported in full and carefully recorded. Medical specimens for future study were collected in the Army Medical Museum, and the Surgeon General Library was expanded. The system of records lead to the publication of the monumental series, *The Medical and Surgical History of the War of the Rebellion*.<sup>27</sup> The Army Medical Museum evolved into the Armed Forces Institute of Pathology and the National Museum of Health and Medicine, and the Library of Surgeon General's Office became the National Library of Medicine of the National Institutes of Health.

### Return to Normal

Many of these reforms were short lived in the U.S. Army, but were incorporated by the European powers, with the result that both sides in the Franco-Prussian War of 1870 incorporated Hammond and Letterman's innovations. In the United States, Hammond's replacement, Surgeon General Jonathan Barnes, reported in 1866, after the war had ended, on the new "peace footing" of the Army:

The system of General Hospitals, Hospital Transports and Ambulance Corps has been dispensed with, hospital supplies have been sold, and provision for the sick and wounded has been made in Post Hospitals, of which there are 187, with a total capacity of 10,881 beds.<sup>28</sup>

## The Confederate Army's Medical Department

The Medical Department of the Confederate Army dates to February 26, 1861, with the passage of the act establishing the General Staff of the Army of the Confederate States of America. At the nucleus of the new Medical Department were the officers who had resigned from medical staffs of the Union Army: three surgeons and 21 assistant surgeons (Cunningham, 1958, p. 31). Eventually, this grew to over 3,200 physicians (Cunningham, 1958, p. 37). The shortage of manpower was always a problem for the Confederacy, and like the North, the South established an Invalid Corps on February 17, 1864.

In most ways, the rise of the Confederacy's medical establishment paralleled that of the Union Army. The following account of the early conditions during summer 1861 could equally describe either side, but it is a description of conditions in the Virginia

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<sup>27</sup> This consisted of six volumes published between 1870 and 1888. "Europeans regard this publication as the Americans' first major contribution to academic medicine" (Bollet, 2002, p. 23).

<sup>28</sup> From the annual report of the Surgeon-General Joseph K. Barnes to the Secretary of War for the year ending July 1, 1866, as reported in Staff of the *Boston Medical and Surgical Journal*, 1867, p. 466.

countryside, not far from Washington, D.C. The reference to the battle as *First Manassas* marks the viewpoint as distinctly Southern; the North named the battle for a local stream, Bull Run:

Confusion attendant upon the early epidemics and the extensive casualties that resulted from the battle of First Manassas [July 21, 1861] and the bloody engagements fought during the campaigns of 1862 was everywhere apparent. All sorts of buildings—private homes, hotels, barns, warehouses, stores, churches, court-houses, and others—were converted into temporary hospitals. (Cunningham, 1958, p. 45)

By 1863, with the construction of military hospitals in both capitals, conditions started to improve. Of particular note was the Confederate hospital built on Chimborazo Heights overlooking the James River. Opened late in 1861, it had a capacity of over 8,000 patients. The hospital's bakery turned out over 10,000 loaves of bread each day. Eventually, the Chimborazo Heights complex included more than 150 buildings. Its fate, however, was that of the confederacy itself; as the rebellion collapsed, so did the fortunes of Chimborazo Heights and the whole Confederate medical establishment.

Augmenting the Confederate Medical Department were a number of organizations that provided goods and services comparable to those the Sanitary Commission provided in the North. All through the South, local soldiers' aid and hospital relief societies provided "generous" aid (Cunningham, 1958, p. 143). According to one Confederate general, had it not been "for such societies there are a great many wounded who would die for want of attention."<sup>29</sup> As a result, Cunningham, 1958, p. 162, notes that, until the last days of the war, the Medical Department of the Confederate Army was "reasonably successful in supplying the sick and wounded with medical and hospital supplies." In one area, however, the South lagged behind the North: Given the social system of the South, fewer women took up the calling as full-time nurses.

Conditions in the South deteriorated during 1864, when Union victories repeatedly sliced deep into the Confederacy. As Sherman pressed his attack, the substantial hospitals in Georgia had to be evacuated to facilities farther south that were judged to be "entirely unfit for the treatment of the sick and wounded" (Cunningham, 1958, p. 66). Around Richmond, the situation stabilized after the battle of Cold Harbor on June 3, 1864, as Grant laid siege to the Confederate capital from Petersburg, south of the city. As a result, a study of available records after the war concluded that

so far as comparison can be made with the statistics at command, disease was not only more fatal among the Confederate forces, but the number of cases in proportion to the strength present was considerably greater among them than among the United States troops. (Smart, 1888, p. 33)

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<sup>29</sup> Quotation attributed to General John B. Hood in Cunningham, 1958, p. 144.

One area that deserves special attention was the movement to provide artificial limbs to amputees. In the North, the government did this. In the South, the Association for the Relief of Maimed Soldiers was organized in January 1864 to “supply artificial limbs for all officers, soldiers and seamen who have been maimed in the service of their country, and to furnish such other relief as will contribute, to the general objects proposed” (as quoted in Cunningham, 1958, p. 145). By the following October, the association had ordered 499 artificial limbs; by the war’s end, 769 amputees were on their rolls. This was the only Confederate-wide relief society.

## The Types of Casualties

The ferocity of the war is indicated by the fact that disease killed *only* twice as many men as had died in battle. This does not reflect any sudden improvement in the treatment of those suffering from disease. It reflects how deadly combat had become with the introduction of such lethal weapons as the case or shrapnel shell.<sup>30</sup> During the Revolutionary War, 90 percent of all casualties had died from disease. The corresponding figure during the Civil War was 61.18 percent.<sup>31</sup>

The extent to which disease remained a significant problem for the Union Army is indicated by the fact that “the mortality rate . . . [from disease in the Union Army] was more than five times higher [than that of] . . . a similar group of men during peacetime” (Goler and Rhode, 2000, p. 170). This number would have undoubtedly been higher if not for the work of the Sanitary Commission.<sup>32</sup> Of particular concern were typhoid fever and smallpox, both with mortality rates of about 37 percent. Diarrhea and dysentery had lower mortality rates but affected more soldiers, killing 38,000.<sup>33</sup> Deaths were not the only way disease reduced the strength of the Army. During the war, the Union Army discharged 161,678 for disease-related reasons.

<sup>30</sup> The antipersonnel munition was invented by the British artilleryman, Henry Shrapnel (1861–1842). Originally, it was a hollow iron projectile filled with a bursting charge of black powder, a time fuse to burst the shell, and upwards of 350 individual balls. By the end of World War I, it was replaced by the high-explosive shell, with the pieces of the shell body itself producing several thousand high-velocity fragments. Such fragments are still called *shrapnel*. See Dupuy, 1980, pp. 218–220.

<sup>31</sup> During the Civil War, of the 304,369 Union soldiers who died, 30.87 percent were KIA and only 61.18 percent died from disease. The remaining 8 percent were from “unknown causes” (Woodward, 1870, p. xxxviii).

<sup>32</sup> The Sanitary Commission’s involvement can be inferred from the number of reported cases of diarrhea and dysentery, diseases usually associated with sanitary conditions. In 1862, the case rate for white troops—the reported cases divided by the “mean strength in field and garrison”—was 0.77; in 1863, it rose to 0.85; in 1864, it dropped to 0.65; and in 1865, it was 0.69. It dropped to the lowest level of the war in 1866, 0.49. Rates calculated from data presented in Woodward, 1870, Table C, p. 636–637.

<sup>33</sup> Calculated from Woodward, 1870, Tables CI and CXI, pp. 636–641, 710–712. It should be noted that, in each category, mortality rates for colored soldiers were greater than for white soldiers, and the discharge rate for colored soldiers was lower than that for white soldiers.

### Nature of the Wounded

The Army's official history of the Civil War notes, "Medical officers were ignorant of how infections spread from wound to wound. As a result, they were initially unable to combat the horrors of what now appear often to have been streptococcal infections" (Gillett, 1987, p. 279). The vast majority of wounds suffered by Union soldiers—76 percent of recorded wounds (Bollet, 2002, p. 84)—was caused by the slow-moving minie ball, which shattered bone and crushed soft tissues, carrying into the body bacteria-laden bits of clothing and other debris. The resulting streptococcal infections turned even small wounds into hospital gangrene, which killed 45 percent of those infected. The type of wound, however, made a difference. According to Gillett, 1987, p. 238,

[s]ixty-two percent of those with chest wounds died, as did more than 87 percent with abdominal wounds, usually within two days of the moment when the bacteria-filled contents of the injured intestines spilled into the peritoneal cavity. Few surgeons would open the abdomen unless fecal material was actually oozing from the wound.<sup>34</sup> Of the 253,142 wounds recorded in the Surgeon General's Office, however, most involved the extremities, more than 35 percent the legs and feet, and another 33 percent the arms and hands.

*The Medical and Surgical History of the War of the Rebellion*, the official medical history of the U.S. Army (Otis and Huntington, 1883, p. 1), reports that, of the 89,528 wounds of the lower extremities, 66 percent were flesh wounds, primarily from gunshots, and 34 percent were "shot fractures," with half these leading to amputations. The mortality rate for amputations of the lower extremities ranged from 13.3 percent for toes or feet to 83.3 percent for hips. The average mortality rate for amputations of the lower extremities was 42.2 percent.<sup>35</sup>

### Amputations

A report by the Sanitary Commission at the end the war suggests that most disabled veterans were amputees because the "sick either get well, die or as invalids, find light employment, while limbless men take much longer to accommodate themselves to their conditions" (Bellows, 1865, p. 13). In fact, as shown in Table 5.1, almost 21,000 amputees survived the war—8.2 percent of all Union soldiers wounded were amputa-

<sup>34</sup> Because of infection, surgeons even refused to do such simple operations as hernia repairs. Army records show that 35.6 percent of hernia cases were discharged (Woodward, 1870, calculated from Tables C, CXI, CI, and CXII).

<sup>35</sup> Age seemed to play a part in who survived. An analysis of 5,506 cases of "amputation of the thigh for shot injury" showed mortality rates of 41.0 percent for soldiers under age 20 and of 58.4 percent for those above age 40 (Otis and Huntington, 1883, p. 358).

**Table 5.1**  
**Amputations, Union Soldiers and Officers**

Recorded Wounds of the Extremities and Total of All Wounds		Amputations		Amputations Survived		Surviving Amputees as a percentage of all wounds
Type	Total	Number	Rate (%)	Number	Rate (%)	
Upper extremities	88,741	16,147	19.4	12,800	79.3	15.4
Lower extremities	89,528	13,833	15.5	8,002	57.8	8.9
Total of all wounds	253,142	29,980	17.4	20,802	69.4	8.2

SOURCE: Adapted from Otis and Huntington, 1883, pp. 1–2 and 877.

tion survivors.<sup>36</sup> Amputations accounted for 75 percent of all operations Union surgeons performed (Reznick, Gambel, and Hawk, 2009, p. 21).

Amputations became the hallmark of the Civil War because the introduction of the anesthetics ether and chloroform lessened the trauma of a painful operation. However, there was a distinct difference between how amputations were done in a civilian hospital in peacetime and how they were done in a military setting during a battle. Surgeons in civilian practice “tended to eschew amputations, or to defer it as long as possible in order to let nature take its course first” (Woloch, 1979, p. 200). In a military setting, delays increased mortality risk. Ever since the days of Napoleon, military surgeons advocated more frequent and immediate amputations to remove the possibility of contamination because the amputation left the wounded with a clean and simple wound in healthy tissue.<sup>37</sup> While surgeons hesitated with a wound of the upper extremity, wounds of the lower extremity led to a quick amputation. By the time of the Civil

<sup>36</sup> The numbers reported in Table 5.1 are an undercount, and the

whole number of amputations performed for injuries received during the war would undoubtedly exceed that number. During the first eighteen months of the strife few or no reports were made of the wounded in the various engagements, and the hospital reports for this period were found to be very meager. Furthermore, a number of amputations performed on officers treated in private quarters, and sometimes by their own family physicians, is unavoidably omitted in this summary, as no reports of these operations were ever sent to this Office. Another class of operations only partially included in this summary are late amputations, performed after the soldiers were discharged from service for wounds received during the war. (Otis and Huntington, 1883, p. 877)

The president of the Sanitary Commission took great pleasure in the fact that “many men with one arm have found occupation in our cities as messengers.” He also noted that the percentage of men who had been blinded was very small and that this was “a remarkable testimony to the general excellence of our commissariat and our hospital system” (Bellows, 1865, p. 14).

<sup>37</sup> According to Pruitt, 2006, p. 719:

Baron Dominique Jean Larrey, “Napoleon’s surgeon,” improved the care of combat casualties by use of a light horse-drawn “flying ambulance” to effect rapid evacuation, which permitted immediate amputation of severely injured limbs on the battlefield. Larrey postulated that the shock of the injury rendered the wound relatively insensitive with corresponding reduction in stress when the operation was performed soon after injury. . . . Larrey’s operative speed and skill may also have reduced operative stress. . . . Larrey could amputate at the hip

War, amputations were relatively common, as reflected in a Union army surgical guide, which noted that “attempts to save a limb which might be perfectly successful in civil life, cannot be made. . . . Conservative surgery is . . . an error; in order to save life, the limb must be sacrificed” (Smith, 1864, p. 462). Chisolm, 1864, p. 416, instructed that

In the performance of all serious operations, when possible, there should be three assistants. One aid gives the chloroform; a second compresses the main artery, which is much better than using the tourniquet—an instrument which is now, in a great measure, discarded from practice—and a third holds the limb and supports the flap during the section. The aid who administered the chloroform during the incisions, can assist in ligating the arteries.

While the records about the number of amputations performed are not complete, at least 30,000 were performed, as shown in Table 5.1.<sup>38</sup> Most noteworthy are the higher mortality rates for amputations of the lower extremities. After the rather benign amputations of a toe or foot, the majority of amputations performed on the lower extremities were for lower legs and thighs. The death rates for these amputations were 32.4 percent and 53.6 percent, respectively.<sup>39</sup>

Generally, as surgeons performed amputations, they began to consider three things: the timing of the operations, the procedures to be used, and the *social class* of the amputees.

### **Timing**

The timing of the operation was critical. Surgeons in both the Union and Confederate armies found that amputations done within the first 24 hours after the injury produced higher survival rates than amputations done later. The Sanitary Commission recommended that “in army practice, on the field, amputations, when necessary, ought to be primary; . . . Amputation with as little delay as possible” (Smith, 1864, p. 461).<sup>40</sup> In fact, over two-thirds of all the amputations were done within 48 hours after the injury.<sup>41</sup> The fatality rate for operations done within this “primary” period was 23.9 percent, compared with 34.8 percent for operations done later, between the third and 30th

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joint in 15 seconds and perform a shoulder amputation in only 11 seconds. Amazingly, Larrey and his assistants recorded a 75% recovery rate of patients upon whom they performed amputations.

<sup>38</sup> Figg and Farrell-Beck, 1993, pp. 454 and 456, reports that approximately 60,000 amputations took place during the Civil War, with at least 25,000 of them among Confederate troops, and suggests that 45,000 survived the surgery.

<sup>39</sup> Numbers calculated from Otis and Huntington, 1883, p. 877.

<sup>40</sup> Dougherty, 1993, pp. 755–756, reports that the timing was divided into three periods: immediate, primary (the first 12–48 hours), and secondary (after 48 hours).

<sup>41</sup> Bollet, 2002, p. 153, notes that the mortality rate in civilian amputations at the time was 50 percent, compared with only 26.3 percent for Union soldiers. He attributes the “lower mortality rate . . . in large part to decisions to amputate early; most civilian amputations were delayed at least 48 hours.”



day after injury. The average increase in the mortality rate for delayed operations was 66 percent, when calculated by type of amputation performed.<sup>42</sup> In fact, even a delay of hours could have deleterious results. An analysis of medical records after the war suggested that, “for those soldiers in overall good health, immediate amputation led to lower rates of complication than occurred when the injured soldiers were transported to a hospital setting” (Goler and Rhode, 2000, p. 169).

### **Procedure**

For amputations of the extremities, two schools of thought developed; one favored the so-called flap operation, and the other favored circular amputations, a debate continued among military surgeons through World War I, more than 50 years later.<sup>43</sup> Eventually, surgeons learned that, while both methods produced “handsome rounded stumps,” the issue was not how the stump looked, but its ability to provide a comfortable base for the prosthesis that would later be attached.

The flap procedure created a flap of skin to close the raw stump, which allowed quicker healing but took longer to perform. The circular procedure was quicker but left a raw open stump that healed gradually. The advantage of the circular method over the flap method, its advocates claimed, was that it “withstood travel better” and was less likely to open and hemorrhage during the rough ambulance rides that moved the wounded to rear-area hospitals (Bollet, 2002, p. 149). The surgery itself was apparently rapidly done, especially when anesthesia was used; a hip amputation could be done in two minutes.

### **Social Class**

Finally, in an era before health insurance and when veterans’ benefits initially extended only to pensions and possible residence in an asylum, the type of amputation the surgeon chose often reflected the social and economic status of the amputee and his ability to pay for an artificial leg. At the beginning of the war, the Sanitary Commission distributed a surgical handbook,<sup>44</sup> which advised that

the poor man’s and the rich man’s leg have long decided the point of amputation of the lower extremity. This distinction is made in the belief that the poor man will either have no artificial appliance to his stump, or one of the rudest character, while the rich man will avail himself of the highest degree of art to compensate

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<sup>42</sup> Calculated from Otis and Huntington, 1883, Table CLXX, p. 879.

<sup>43</sup> In one sample of 11,503 cases, 6,240 favored flaps and 4,813 favored circular operations (Otis and Huntington, 1883, p. 880). In *Handbook for the Military Surgeon*, Tripler, 1861, p. 61, recommends that “where there are two bones, as in the leg, I am in favor of the circular. In the thigh or arm, I prefer the flap.”

<sup>44</sup> Stille, 1866, p. 111, notes that because of the

low standards of professional ability in the army . . . the Commission requested certain of its Associate Members, men of eminent professional reputations in various parts of the country, to prepare a number of concise treatises, concerning those diseases which experience has proven always prevails in large armies, [and] formed for the Army Surgeons a portable medical library, of great value.

his loss. This question must always present itself to the military surgeon, if the rule remains valid, for in the ranks of every army we find, as in society at large, persons filling every grade of social position. (Smith, 1864, pp. 490–491)

The commission did recognize, however, that the “old rule” might be changing “in this country, where public and private charity is so lavish in the relief of suffering, and the poorest may, by economy, accumulate wealth, the question may well be mooted” (Smith, 1864, p. 491). In fact, in 1862, Congress authorized the Army Medical Department to provide amputees with artificial limbs, but the policy was not implemented until 1864 (Staff of the *Boston Medical and Surgical Journal*, 1867, pp. 2–4).

### Neuropsychiatric Casualties

The Civil War was the first war in which psychiatric casualties were recognized as militarily significant and was a particular concern of Surgeon General Hammond, but no system of treatment was established. Some have argued that changing conditions accompanying modern warfare contributed to an increased significance of psychiatric casualties during the Civil War and later conflicts.<sup>45</sup> In earlier wars, armies spent most of their time foraging for food and shelter and searching for the enemy and little time actually fighting. During the Revolutionary War, neither side fought during the winter, limiting the duration of campaigns to the milder months. Closed formations, inaccurate weapons of limited range, and brief and infrequent encounters characterized premodern warfare. All these conditions served to reduce the susceptibility of troops to manifestations of combat stress (Ingraham and Manning, 1986, pp. 26–27). By the end of the Civil War, however, improved transportation meant forces were able to fight for longer periods, while food and other supplies were brought to them. Further, rifles replaced muskets, enhancing the lethality and therefore the terror of the battlefield, particularly from snipers who could pick off soldiers in what might previously have been seen as the relative safety of the rear area.<sup>46</sup> Campaigns now could be fought year around, particularly in the milder South.<sup>47</sup> Open formations and fluid battles meant less close contact with comrades and greater chaos. While it is clear that

<sup>45</sup> This is discussed at length in the first part of Binnevel, 1997. He notes that it was not until the Russo-Japanese War of 1904–1905 that “Russian doctors who recognized the problem and made a serious attempt to set up a system of treatment” (Binnevel, 1997, p. 4).

<sup>46</sup> Hess, 2008, p. 196, notes: “Sniping made the battlefield a more dangerous place for men who had formerly felt comfortable several hundred yards behind the firing line.” He quotes a southern soldier as telling his wife, “We lose a few men in the trenches every day. The sharp shooting on both sides is murderously active and accurate . . . even 1,100 yards from the Yankee snipers” (Hess, 2008, p. 191).

<sup>47</sup> For example, General Sherman’s army started to move on Atlanta in May 1864, capturing the city in September 1864. This was almost immediately followed by the “March to the Sea” during November and December; a month later he was on the march again through the Carolinas until war’s end in April 1865.

psychological casualties have always been with us, they were not recognized until the advent of modern psychiatry in the 20th century.<sup>48</sup>

Officially, less than one-sixth of 1 percent of Union soldiers serving in the Civil War were diagnosed with a neuropsychiatric impairment, although many such casualties were likely never recorded and were dealt with in ways that we would today consider totally unacceptable. By one account, after the battle of Antietam, upwards of one-third of the Confederate Army of Northern Virginia were classified as “sulkers” or “stragglers,” rather than being classified as having a neuropsychiatric ailment, as we might do today (Marlowe, 2001, p. 19). Many of the 11,000 Union troops evacuated by boat after the battle of Shiloh were said to be suffering from “nostalgia,” even though they were never so classified (Dean, 1997, p. 128).

*The Medical and Surgical History of the War of the Rebellion* dedicates only a few pages to mental and nervous diseases and provides statistics on only three diagnoses historians consider to represent psychological conditions: insanity, nostalgia, and sunstroke.<sup>49</sup> It lists all three under the category of diseases of the nervous system, and reports 15,350 such cases, including 1,110 among black troops for whom statistics were kept separately and not recorded until mid-1864 (Table 5.2) (Woodward, 1870, pp. 638, 710).

While the true magnitude of neuropsychiatric casualties will never be known or even satisfactorily estimated, one student of the subject noted:

Civil War soldiers—North and South—who cracked under the pressure and sought to escape an intolerable situation were almost universally regarded with contempt as malingerers and shirkers. Hundreds of deserters in that war were captured, brought back to their regiments, and shot to death by military authorities. (Dean, 1997, p. 180)

Early in the war, both the government and its soldiers expected the war to be won in weeks or a few months. Most of the Union soldiers at First Bull Run were serving three-month enlistments. As hopes were dashed and as soldiers began to understand that the war might last much longer, the prevalence of depression, homesickness, lack of appetite and weight loss, and intestinal disorders rose. Nostalgia presented a treat-

<sup>48</sup> Dean, 1997, p. 211, argues that “absence of modern diagnostic categories and the presence of a different set of cultural ideas in the nineteenth century concerning disease and suffering make it difficult to quantify the exact incidence of . . . [psychiatric] disorders in the Civil war . . . population.”

<sup>49</sup> The set of military medical essays the U.S. Sanitary Commission published ignored mental and nervous diseases entirely, as did the classic work, *The Medical Department of the United States Army in the Civil War* by Duncan (1931b), as noted in Deutsch, 1944, p. 377. Civilian psychiatry at the time still used an ages-old three-classification system of psychiatric disorders: mania (anxiety and agitation), melancholia (depression or lethargy), and dementia (deterioration of mental processes). The official records listed none of these, although soldiers displaying melancholia could have been considered as having nostalgia, and those displaying dementia could reasonably have been categorized as being insane.

**Table 5.2**  
**Incidence of Neuropsychiatric Diagnoses, Union Army**  
**(1861–1866)**

Diagnosis	Troops		
	White	Black	Total
Insanity	2,410	193	2,603
Nostalgia	5,213	334	5,547
Sunstroke	6,617	583	7,200
Total	14,240	1,110	15,350
Mean army strength	431,237	60,854	492,091
Mean rate	0.03	0.02	0.03

SOURCE: Adapted from Woodward, 1870, pp. 638 and 710.

ment dilemma for doctors. Commanders found nostalgia most prevalent during training or periods of inactivity between battles. They learned that a generous furlough system helped lessen the nostalgia problem.<sup>50</sup> When furloughs were impossible, they learned to work soldiers hard so they had no time to become homesick.

The surest cure for nostalgia, however, was actual combat. But combat produced its own problem, referred to as *soldier's heart*, a rapid and uncontrollable heartbeat and palpitations. There were no known organic heart ailments that could account for these symptoms, and soldier's heart was not recorded as either a nervous or a heart disorder. Such symptoms became a common complaint over the next 50 years and eventually were associated with the "psychological consequences of . . . [modern] warfare" (Marlowe, 2001, p. 17).

Evidence that the Medical Department considered mental problems modest is the response the Surgeon General gave to an offer in 1864 to assist in the treatment of soldiers by the Association of Medical Superintendents of American Institutes for the Insane:

Please accept the thanks of this Department for the cordial offer of assistance, and assure the Association that should a more urgent necessity than now exists render it advisable, their offer will be gladly accepted. (as quoted in Deutsch, 1944, p. 378)

This lack of attention to psychiatric casualties reflects the primitive state of psychiatry at the time. During the war, not a single article on military psychiatry was published in the *American Journal of Insanity*, and no papers on the topic were presented at any of the meetings of the Association of Medical Superintendents of American

<sup>50</sup> Dr. J. Thomas Calhoun, the surgeon-in-chief of the Second Division, Third U.S. Army Corps, recounted that, when General Hooker took command of a "demoralized army . . . [he] immediately raised its morale to a high level by adopting a liberal system of furloughs as rewards," as reported in Deutsch, 1944, p. 376.

Institutes for the Insane (Deutsch, 1944, p. 377). Deutsch, in the landmark retrospective *One Hundred Years of American Psychiatry*, noted that the infant profession of psychiatry

remained remarkably aloof from the conflict. . . . [Besides] protest[s] against the shocking custom of discharging mentally sick soldiers from the Army and allowing them to find their own way home, unattended by guardians, little interest was displayed in military psychiatry. (Deutsch, 1944, p. 384)

If this lack of attention is disturbing by today's standards, Marlowe, 2001, pp. 18–19, suggests that it was consistent with the long run of history as the attitudes during the Civil War were

far closer to that of the Greeks. . . . than those of our time. Soldiers were either brave or cowardly. . . . The cultural construct of the time left little room for the expression of responses to the stresses of combat that were other than physical or the behavior of the truly “mad.” . . . [Y]et we can discern among Civil War veterans a series of symptom patterns that have in recent times been classified under the various rubrics of combat fatigue, battle shock, combat stress reaction, and post-traumatic stress disorder.

### **Providing for the Disabled Veteran**

For the first time in the nation's history, the country had to deal with a large number of war casualties, some for a prolonged time. The commitment to do this was reflected in President Lincoln's Second Inaugural Address on March 4, 1865, “to care for him who shall have borne the battle and for his widow and his orphan” (Glasson, 1918, p. 124). The commitment to provide invalid pensions was never in doubt. Repeating an almost universal theme of history, from the very outset of the war, Glasson, 1918, p. 124, observed that “invalid-pensions were offered as an inducement to promote voluntary enlistments.” What was new was the federal government's commitment to large-scale care for the wounded, rather than devolving that care to state or local governments, by constructing and maintaining a system of soldier's homes to provide custodial care for the indigent and disabled and by providing maimed veterans with artificial limbs. These early moves were forerunners of the system of national care and rehabilitative services that would dominate veterans' care in the following century.

### **Problems at Separation**

President Lincoln's declaration in his Second Inaugural Address notwithstanding, problems for disabled veterans started with their separation. The Sanitary Commission created the Free Pension Agency in February 1863 to help veterans apply for their invalid pensions, a role that such veterans' service organizations as the American Legion and the Veterans of Foreign Wars would take on in later years. Later renamed the Army and Navy Claims Agency, this organization and its branches saw to it that

between fifty-five and sixty thousand claims for pensions to soldiers, their widows, mothers, or orphans [were] presented to the proper Government officers, and the evidence in support of them arranged and preserved. These claims form nearly one half of the whole number presented to the Government Pension Office. (Stille, 1866, p. 313)

The agency's operations continued long after war ended because many demobilized soldiers who were entitled to pensions did not immediately apply for them.<sup>51</sup>

In general, without an up-and-running veterans' bureau and with a government that considered pensions as its only obligation to invalid soldiers, the Sanitary Commission filled in where needed. Today's Fisher Houses at military hospitals also had their counterpart in the homes and lodges the Sanitary Commission established:

Provision was made at the great military centers for the accommodation of the wives and mothers of soldiers, whose anxiety concerning their relatives in Hospitals had led them to come to their relief. (Stille, 1866, pp. 314)

While the government made the effort to return disabled veterans to their enlistment locations, it did not go out of its way to tailor the journey with the comforts of a soldier's "enfeebled condition" in mind. The commission took it upon itself to do what it could; among other things, it chartered a "spacious steamer, with capacity for three hundred and twenty-five beds" to deliver invalid soldiers to their destinations (Stille, 1866, pp. 405).

### **View of the U.S. Sanitary Commission on Establishing Soldiers' Homes**

While the commission worked to provide for the immediate care of veterans, it also was concerned with the "timely provision for the soldiers disabled in the war, after peace shall be restored" (Bellows, 1862, p. 1). As early as 1862, the U.S. Sanitary Commission set out to "create a public opinion which shall conduce to, or compel the adoption of, the wisest policy on the part of our municipal and town governments, in respect of disabled soldiers" (Bellows, 1862). Noting "the question is full of difficulties, [and] very little information or guidance is to be obtained from books" it sent a representative "to collect information by personal visits to all the chief Military Hospitals in Europe." Not waiting for the report from Europe, Bellows' set out the commission's "guiding principles," arguing that, first, the nation "must have a sound, a generous, a wisely considered pension law" (Bellows, 1862, p. 1). Second,

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<sup>51</sup> According to Stille, 1866, p. 486:

The Commission had undertaken gratuitously to solicit the claims on Government of some fifty thousand men who had been disabled in the national service and of women and children representing men who had died in the national service. Many of these claims could not be worked through the machinery of Government in less than two years.

disabled and invalid soldiers should be encouraged in every way to settle in the neighborhoods from which they came, and be thrown as much as possible on the fraternal responsibility of their neighbors for employment and sympathetic aid. A sense of local or communal responsibility to leave the light employments in every village or hamlet to these invalids, should be cherished. (Bellows, 1862, p. 2)

In December 1865, nine months after the war ended, the commission laid out its plan for the care of disabled Union soldiers. It noted that, the previous May, there had been 183 general hospitals and 78,313 patients and that, by December, there were only 20 hospitals with no more than 2,463 patients. Concerned that many had left the hospitals sooner than prudence would have dictated and that invalidism, begging, and other evidence of deprivation were apparent in many cities, the commission wanted to assure the citizens that this would end soon. Its survey of cities throughout the North suggested to it that no more than 2,000 might require the services of public asylums or soldiers homes, and “as far as public asylums are concerned, it is almost exclusively a question of what shall be done for the soldiers of foreign birth, and chiefly new comers” (Bellows, 1865, p. 10). The commission wanted no part of “expense palaces”:

We believe the pension system is the proper substitute for military asylums. We could desire that the wholly disabled, who claim public support, should be pensioned to the full extent of their living, board, and clothes, and then suffered to go where they please, and look up their own residence and their own protectors. It would be both more humane, more economical for the country, and more favorable to the temper and spirit of our people. . . . The worst suffering consequent upon the war, is in the families of soldiers that make no appeal for special protection; but who, from having a disabled head, or from the want of any, being widows and orphans, are smitten in thousands of cases, with a poverty and desolation they never knew before. Town, county, and State relief does something for this class. But the pension system is their true resource, and pensions ought to be paid promptly and doubled in amount. (Bellows, 1865, pp. 17, 21)

### **Soldiers' Homes**

Bellows's views notwithstanding, both state and federal facilities provided long-term care for Union veterans. Congress chartered the national homes, with the states and the federal government splitting the costs and the states doing the work.<sup>52</sup>

On March 5, 1866, Congress incorporated the National Asylum for Disabled Volunteer Soldiers and Sailors. In 1873, the word *home* replaced the word *asylum*. There were 11 branches throughout the country. A home was a place of residence, providing only infirmary-level medical care. Originally, the homes housed Civil War

<sup>52</sup> The Confederate Congress authorized the creation of “a national Confederate ‘Veteran Soldiers’ Home’ for ‘wounded and disabled officers, soldiers, and seamen’ [but] President Jefferson . . . vetoed the bill on constitutional grounds” (Rosenburg, 2000).



veterans with service-connected disabilities. In 1884, veterans from the War of 1812 and the Mexican War were admitted, and in 1887, the homes were opened to “veterans suffering economic distress from disabilities not incurred in military service” (Adkins, 1967, p. 62). In 1900, admission was extended to veterans of any war, which allowed veterans of the Spanish-American War to take up residence. They became part of the new VA in 1930.

As early as 1862, the states opened their own homes, partially paid for with federal funds. By 1865, over 9,000 veterans were receiving care in 33 state homes in 28 states, and 20 states provided “haven for veterans’ wives, widows and mothers.” (Adkins, 1967, p. 77). In 1888, Congress agreed to fully reimburse the states for the Union veterans they housed. By 1910, almost 32,000 Union veterans—about 5 percent—were living in state-sponsored homes paid for by the federal government.

### Pensions for Veterans

Shortly after the outbreak of war, Congress passed legislation providing disabled veterans, widows, and minor children of dead Union soldiers with pensions. As the war dragged on and the rush to enlist subsided, Congress moved to assure soldiers that, if they were wounded, they could claim a pension as a “matter of right.” The Civil War pension law of July 14, 1862,<sup>53</sup> known as the General Law, was considered to be “the most munificent enactment of the kind adopted by any nation.”<sup>54</sup> The 1862 law compensated for disabilities incurred as a direct consequence of performing military service and for subsequent deaths “from causes that can be directly traced to injuries received or disease contracted while in military service” (Glasson, 1918, p. 125). It established a medical screening system for rating and compensating disabilities. The gatekeepers of the system were local physicians who examined claimants and issued surgeon’s certificates that were forwarded to the Pension Bureau in Washington. This, however, often led to claims that the system was “rife with fraud.”<sup>55</sup> Besides generous payments for total disabilities, the law included that widows, orphans, and other dependents (who eventually included mothers, sisters, fathers, and brothers) received pensions equivalent to the rate the deceased family member would have received for a total disability.

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<sup>53</sup> This was predated by the act of August 3, 1861 that “all volunteers . . . wounded or otherwise disabled in the service, should be entitled to the benefits conferred on persons disabled in the Regular Army” (Glasson, 1918, p. 124). This act, however, did not apply to the volunteers called into service in April and May 1861. This and other “uncertainties and discrepancies” meant that many claims by veterans, widows, and orphans were denied (Glasson, 1900, pp. 72–73). The 1862 law corrected these problems.

<sup>54</sup> Statement by the Secretary of the Interior, as quoted in Skocpol, 1992, p. 106. The General Law was predated by the Disability Act of August 3, 1861, which established a disability retirement system for all regular officers of all branches. It did not, however, cover all military personnel or provide for survivor benefits, as did the 1862 law.

<sup>55</sup> A number of scholars have investigated factors affecting how pensions were awarded, as discussed in Blanck and Millender, 2000, pp. 14–17.

Reprising the experience in the decades after the Revolutionary War and reflecting the political strength of such veterans' groups as Grand Army of the Republic (GAR),<sup>56</sup> pension benefits and eligibility expanded over time:

- In 1864 and 1866, Congress increased the maximum compensation and expanded pension coverage to those contracting diseases, such as malaria, "based on their equivalence in disability to war-related wounds" (Blanck and Millender, 2000, p. 7).<sup>57</sup> Recognizing the cost of getting care outside a hospital, the law now provided for additional payments to be given to the disabled who required regular or even partial "aid and attendance" in an amount greater than the payments for a "total disability in both feet" or "the incapacity to perform manual labor" (Glasson, 1900, p. 77).<sup>58</sup>
- The Pension Consolidation Act of 1873 addressed "conditions and diseases contracted during military service that subsequently resulted in a disability." As a result, by 1888, "sixty-four percent of all pensions . . . were for diseases and conditions not incurred on the battlefield or campground." (Blanck and Millender, 2000, p. 8).
- The Arrears Act of 1879 "transformed Civil War pensions from relatively straightforward compensation for wartime disabilities into fuel for patronage politics" (Skocpol, 1992, p. 120). Members of Congress actively interceded to press the cases of constituents and political appointees at the Pension Bureau. The Arrears Act allowed soldiers with newly discovered war-related disabilities to receive a single payment equal to all the pension payments they would have received if they had made the claim at the time of the war. This resulted in a lucrative business for claims agents, who encouraged veterans to sign up, at no cost to them, to see whether their pension attorneys might get the government to grant them a pen-

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<sup>56</sup> Union veterans formed the GAR. For a discussion of the role it played, see Glasson, 1918, pp. 205–234. On p. 238, Glasson observed that the "passing of the act of 1890, [by] the Republican Congress and national administration attached strongly to that party the great majority of the GAR voters." Also see McConnell, 1992.

<sup>57</sup> Prior to the Civil War, the federal government carried 10,700 veterans and widows on the pension rolls. At the end of the war in 1865, the number of disabled military pensioners was 35,880, about 2 percent of all Civil War veterans. These numbers grew steadily. By 1885, over 244,000 Civil War veterans, about 17 percent of all veterans, were receiving disability payments. Moreover, the provisions of the pensions not only became progressively more generous, they sharply increased the number of veterans receiving pensions.

<sup>58</sup> In 2010, Congress dealt with a similar issue. The Caregivers and Veterans Omnibus Health Services Act provided funds for those caring for disabled veterans to augment the staff at military or VA hospitals and/or after the disabled veteran has been discharged from VA facilities. The Secretary of Veterans Affairs may provide instruction and training; technical support to include a customized plan of care for the disabled veteran; counseling; lodging and subsistence; respite care; medical care; and "a monthly personal caregiver stipend" (Caregivers and Veterans Omnibus Health Services Act of 2010, Public Law 111-163, May 5, 2010).

sion.<sup>59</sup> The pensioner would, of course, pay the agent if the claim were granted. Retroactive claims were difficult to deny if the disability resulted from illness rather than a battle wound. Within a decade, pensions granted for disease were far more prevalent than those granted for wounds, amputations, and battle injuries (Glasson, 1918, p. 138).

- The Dependent and Disability Pension Act of 1890 “created the most costly and liberal pension scheme in the world” (Blanck and Millender, 2000, p. 9). By the terms of the act, all Civil War veterans who could demonstrate that they were incapable of *manual labor* from causes not attributable to vice or misconduct automatically became pensioners, even if the cause was not service connected. Death benefits were likewise paid to the current widows and children of Civil War veterans without regard to the cause of the veteran’s death or his status at the time of his service. The 1890 act, as one critical review noted,

was a measure calculated to bring about dependence on public aid and the simulation of body ills on the part of those who were in ordinary physical conditions for their time of life and well able to care for themselves. There was every encouragement to the ex-soldiers to discover in themselves, and magnify, ailments which would have been little noticed but for the pension laws. (Glasson, 1918, p. 237)

It placed on the pension rolls, in the words of a GAR report, “all of the survivors of the war whose conditions of health are not practically perfect” (as quoted in Glasson, 1918, p. 237).

- In 1904, President Theodore Roosevelt issued Executive Order No. 78, which established old age itself as a disability covered under the act. This was followed by the Sherwood Act of 1906, which made age 62 “a permanent specific disability within the meaning of the pension law” (Skocpol, 1992, p. 129).

The symbol of this growth of the pension system was the massive Pension Building built in Washington in 1887. In 1880, Civil War pensions accounted for 21 percent of the federal budget; in 1893, the number had grown to 41.5 percent (Skocpol, 1992, p. 128). Civil War soldiers’ pension rolls topped off in 1898 at 745,822 (Saltzgaber, 1916, p. 6). In 1912, the pension rolls for widows topped off at 304,373. On the eve of World War I, 50 years after the end of the Civil War, there were still 362,000 Civil War pensioners, only 11 percent of whom were disabled. The average old-age pension was \$285

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<sup>59</sup> By 1898, the Pension Bureau had authorized 60,000 attorneys to represent veterans. “About one thousand lawyers dominated the field, and the most active . . . managed an astounding 125,000 claims at one point in his career,” (Blanck and Millender, 2000, p. 31). However, empirical analysis of

a sample of over 27,000 federal pension applications filed by more than 8,000 white UA [Union Veterans] between the years 1862 and 1907 . . . [suggests that] attorney usage did not always help applicants in obtaining favorable pension outcomes. In fact, the use of attorneys often made outcomes less favorable. (Blanck and Song, 2002, p. 8 and p. 67)

per year, and average “invalid” pension was \$374 per year. Almost 227,000 widows of former Union soldiers received pensions, which averaged \$147 per year (see Saltzgaber, 1916, p. 11).

### Care for the Maimed Veteran

For one important class of disabled veterans, the provision of pensions was far from adequate. As noted, over 20,000 amputees survived the war. Artificial limbs were expensive, and their costs weighed on surgeons’ decisions about which type of amputation to perform.<sup>60</sup> In 1862, Congress authorized the Army Medical Department to issue artificial limbs. The program began in 1864. During its first year, the department issued 669 artificial legs and 339 arms; by the end of the third year, it had issued more than 6,000.<sup>61</sup>

In 1870, Congress passed further legislation that provided for the replacement of artificial limbs every five years and authorizing commutation—a cash payment—for those who decided not to take the limb. In 1891, the legislation was modified to permit replacements every three years. As Figure 5.1 shows, most veterans took the cash payment over a government-provided limb. Army records show that, almost immediately after the commutation law passed in 1870, 10,187 amputees applied for artificial limbs (Surgeon General, 1893, pp. 7–8).<sup>62</sup>

### Care for Psychological Casualties

As it had been since the days of the Greeks, “most psychologically disturbed Civil War veterans were cared for, at least initially, in the traditional manner at home by their families, even though their mental torment was frequently a terrible burden on all concerned” (Dean, 1997, p. 137). Disability claims for pensions based on psychological problems generally required proof that the affliction had developed during the war. Thus, claims for what we think of today as late-onset PTSD were rejected. And as Jaffin, 1990, pp. 142–143, noted, a

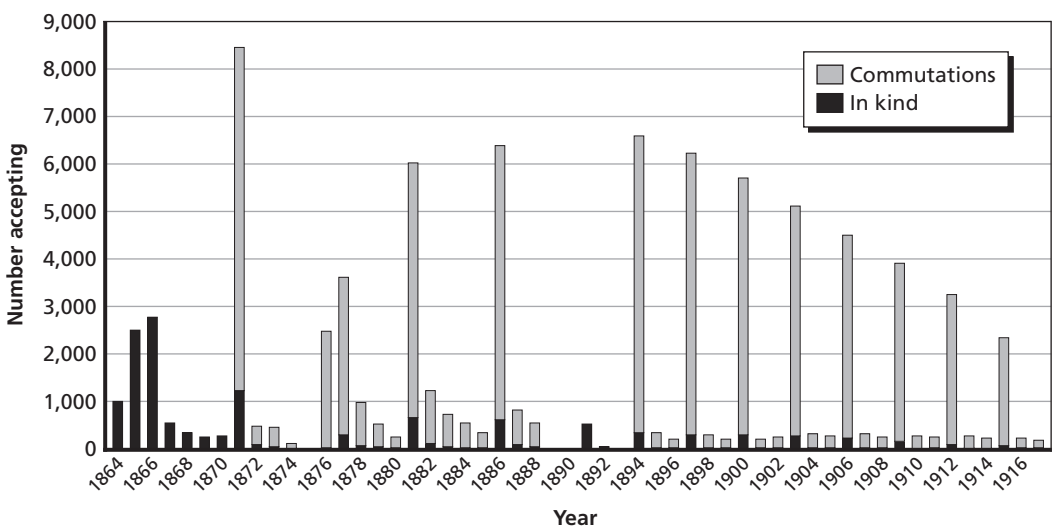
great many psychologically disturbed veterans, particularly those cases regarded as “chronic” or “incurable,” had to find support in other quarters; confinement at

<sup>60</sup> Reznick, Gambel, and Hawk, 2009, p. 23, notes: “In the 15 years before the [civil] war, 34 patents were issued for artificial limbs and assisting devices; during the 12 years from the beginning of the war to 1873, 133 patents for limbs were issued, nearly a 300% increase.”

<sup>61</sup> No such program was authorized in the Confederacy, but the provision of artificial limbs was taken up after the war by the individual Southern states, especially after the Reconstruction period (Rosenburg, 2000).

<sup>62</sup> Many amputees’ stumps could not be adequately fitted with artificial limbs, particularly if the amputation had been performed near the hip or shoulder. In others, pressure on the stump caused great pain. Figg and Farrel-Beck, 1993, p. 464, notes that “problems such as noise, weight, and appearance, as well as cost, availability, tendency to damage clothing, and pain in wearing might have been deterrents for [some] veterans.”

**Figure 5.1**  
**Artificial Limbs: In Kind Versus Commutation, 1864–1918**



SOURCES: Annual Reports of the Army Surgeon General, 1886–1917.

RAND MG1164-5.1

home, residences at the poorhouse or soldiers' homes and poor relief administered in the community . . . or by [a] local . . . [veterans organization] relief committee.

If violent behavior was manifest, the veteran was sent to the local or state insane asylum. By 1880, there were over 140 insane asylums in the United States, ranging in size from 100 patients to as many as 1,900 patients. The records of the 291 veterans committed to the Indiana Hospital for the Insane provide a disturbing picture of the care Civil War veterans received after the war (Dean, 1997, Ch. 8). Suffice it to say that 51 percent of the veterans committed to this hospital between 1861 and 1919 committed or attempted to commit suicide (Dean, 1997, p. 151).

### The Neglected Veterans of the Confederacy

Today it is polite to talk in rather neutral terms of the *Civil War* or the *War Between the States*, but to the victorious northern states the war had been fought to put down a rebellion. While reconstruction formally ended in 1877, the resentment of southern whites lasted much longer. One way it was manifested was the constant reminder of the way their veterans were treated. In 1907, William H. Glasson wrote of the frustration felt in the South:

Though the South was paying tens of millions in indirect taxation [through tariffs that had the effect of protecting Northern industries] to the national Government, which was expended in pensions to Union soldiers, she did not hesitate to make her burden a double one. The payment of pensions to invalid Union soldiers was very

generally accepted as one of the results of the war. But such acts as that of 1890, under which vast sums have been paid out to former Union soldiers who received disability in war and who are perfectly able to support themselves in comfort, and often in luxury, have certainly worked a grave injustice to the South. But her comparative poverty and the unjustly large sum taken from her for the national pension system have not deterred the States of the South from one after another inaugurating Confederate pension systems. (Glasson, 1907, p. 45)

Skocpol called the Civil War pension system “an unabashed system of national care, not for all Americans in similar work or life circumstances, but for the *deserving core of a special generation*” (Skocpol, 1992, p. 151; emphasis added). For this “deserving core” of Union veterans, the Civil War pension became an “old-age and survivors’ benefit program” almost 50 years before the enactment of Social Security. The importance of the program and the disparity of treatment between the states of the North and the states of the old Confederacy are strikingly illustrated in Figure 5.2. In states of the old Confederacy, 6.7 percent of the male population over 65 received pensions, while in the states that made up the Union at the end of the Civil War, 19 percent of the male population over 65 received pensions. Six percent of all pensioners were living in the old Confederacy, 10 percent in the new states of the west, and over 83 percent in the states of the old Union.

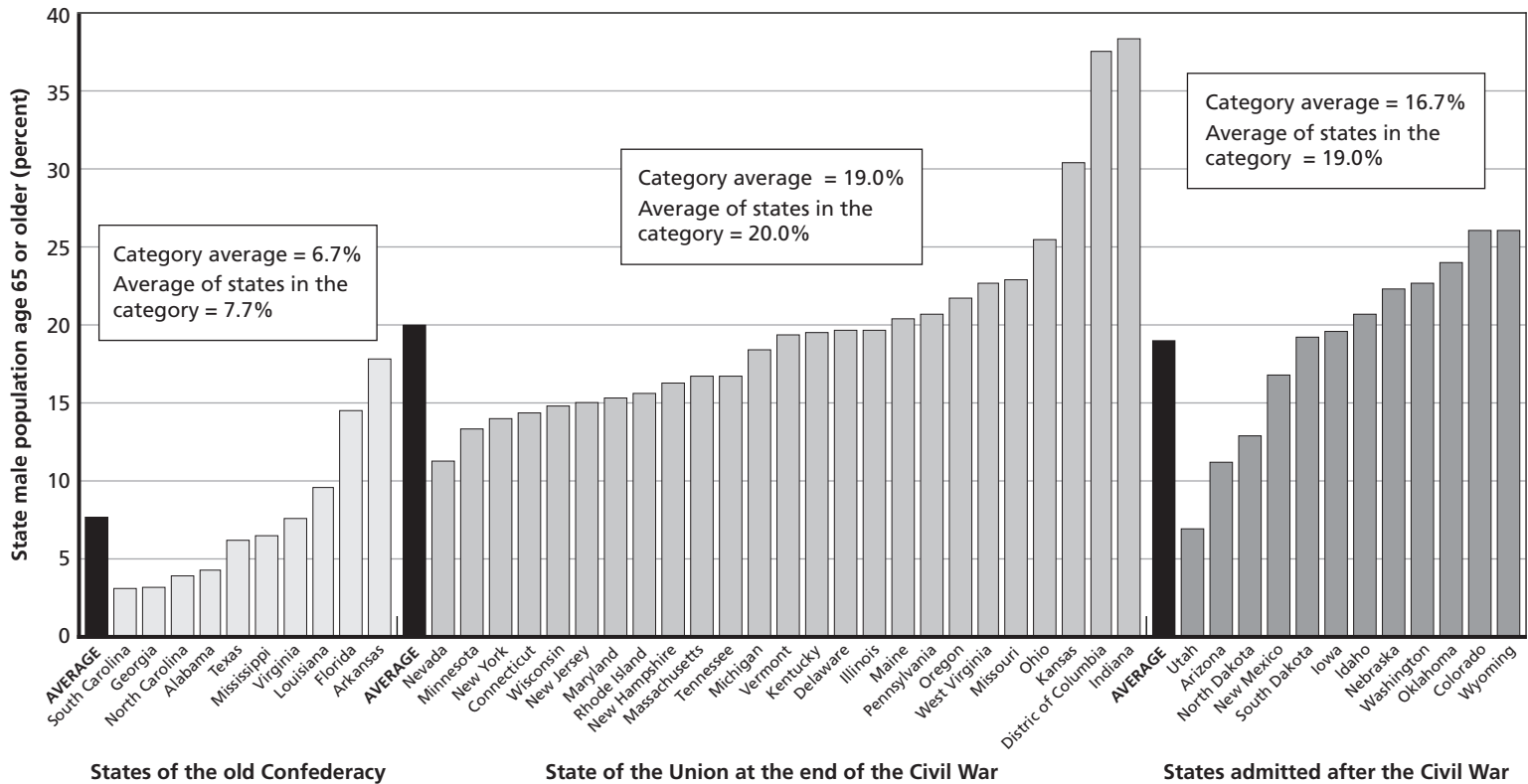
### State Pensions for Disabled Confederate Veterans

After Reconstruction, private charities and all 11 former Confederate states provided pensions that were “much less generous” and limited to “service-connected disabilities and to truly indigent veterans or widows.” For example, Georgia, the most generous Southern state, did not pay for artificial limbs until 1879, nine years after Union soldiers were granted a similar benefit. The state did not pay regular pensions for disabled soldiers until 1889, and then paid \$150 per year for loss of a hand or foot. Compare this with the federal payment to Union veterans of \$1,200 per year for the loss of a hand or foot. (See Glasson, 1907, p. 45.)<sup>63</sup> In 1896, Georgia finally authorized pensions for widows of soldiers killed in service or who died after the war from disabilities or diseases contracted during the war in 1896. Payments to the indigent widows of Confederate veterans were not approved until 1902. In 1906, 18 percent of Georgia pensions went to disabled veterans, 50 percent to indigent veterans, and the rest (30 percent) to widows (Skocpol, 1992, pp. 139–140).

By 1892, without support from the federal government, the former Confederate states were providing approximately 27,000 pensions to veterans and dependents, only

<sup>63</sup> As a point of comparison, in 1880, an overseer in the boot and shoe industry in Baltimore, Maryland, made \$1,200 per year, a skilled finisher made \$864 per month, and a laborer \$216 per year (Weeks, 1886b, p. 19). A common laborer in Atlanta working in a flour and gristmill made \$288 per year. A pair of heavy men’s boots could be bought in Nashville, Tennessee for \$3.00 (Weeks, 1886a, p. 92).

**Figure 5.2**  
**Estimates of the Percentage of the Elderly—Age 65 or Above—in the States and District of Columbia Receiving Civil War Pensions in 1910**



SOURCE: Adapted from Skocpol, 1992, pp. 541–542.

RAND MG1164-5.2



about 5 percent of the eligible population (Snyder, Gawdiak and Worden, 1991, p. 51). By 1910, the percentage of the elderly receiving Civil War pensions ranged from 3.1 percent in South Carolina to 30.4 percent in Kentucky (Skocpol, 1992, p. 541); veterans' homes in the Old South cared for fewer than 2,000 of their veterans, fewer than 1 percent of the surviving Confederate veterans. It was not until 1916 that Congress even held hearings on the possibility of admitting Confederate veterans to national homes.<sup>64</sup> But despite the growing political power of long-serving Southern Democrats in Congress, opposition arose from the South itself to taking handouts from the federal government that would "undermine the poor Confederate soliders' 'pride and self esteem' and especially their sense of honor" (Rosenburg, 2000, p. 221). In 1958, Congress finally agreed to provide pensions for veterans of the Confederacy, their widows, and their children—the benefits Union veterans and their families had received since 1890.<sup>65</sup> In 1965, a century after the end of the war, some 1,800 civil war widows and orphans were still receiving benefits. The last Civil War veteran, a Confederate soldier, died in 1959 (Driver, 1966, p. 235).

## The Legacy

The Civil War was, by any measure, a watershed event not only in American history but also in the history of military conflicts and military medicine. This was the first industrial-age war that organized armies on a previously unknown scale and that introduced new weapons, such as ironclad war ships, breach-loading rifles, and machine (Gatling) guns. For the first time, troops were transported by steamship and rail. The sieges of Vicksburg and Richmond foretold the trench warfare of World War I.

The Civil War was too early to benefit from the breakthroughs in medical science that would follow shortly, but the lessons the British had learned from the Crimean War were magnified so that, as one scholar concludes:

The Civil War's bloody crucible was a watershed episode in the treatment of battlefield casualties. It inaugurated a staged, well-organized emergency medical system and established a standard for medical care that would challenge physicians' skills for decades to come. The system of battled care to ambulances to field hospitals [to General Hospitals] developed during the Civil War remained the pattern of organization for battlefield medicine, both European and American, during all the huge wars fought for nearly a full century, until it was replaced by helicopter evacuation directly from the battlefield [during the Korean War]. (Bollet, 2002, p. 5)

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<sup>64</sup> See the discussion in Adkins, 1967, pp. 19, 78.

<sup>65</sup> See Public Law 85-425 as noted in Adkins, 1967, p. 78. The Veterans' Benefits Act of 1957 was amended "to provide pensions to widows of veterans who served in the military or naval forces of the Confederate States of America during the Civil War" (An Act to Amend the Veterans' Benefits Act of 1957, 1958).

The actual medical care wounded soldiers got was less impressive. Despite the widespread use of chloroform and ether to provide “pain-free” surgery, surgeons still could not control infection, and the preferred treatments of the day resembled the treatment a Roman soldier would have received more than they did the treatments that would be standard 50 years later, during World War I. The routine reuse of clothing, bedding, and even dressings and the failure to cleanse hands or instruments resulted in a prohibitively high rate of infection. As a result, abdominal wounds, chest wounds, and pelvic fractures were almost always fatal. While some of the advances that would eventually revolutionize medicine were taking place at the same time as the Civil War—Louis Pasteur identified bacteria as the cause for putrefaction in 1861—the widespread acceptance of antiseptics did not come until the end of the 19th century. One indication of how the Civil War might have been different came in 1867 in Lister’s report on the use of carbolic acid spray during amputations, which “reduced the death rate after amputation from 16 of 35 cases (46%) to 6 of 40 cases (15%)” (Pruitt, 2006, p. 721).

For those who fought for the Union, the aftermath of the Civil War saw a continuation of the American pattern of providing substantial care for the wounded and generous financial benefits for nondisabled veterans. The first glimmer of the government taking responsibility for the rehabilitation of a disabled soldier can be seen in the congressional decision to provide amputees with prostheses. While short of a full program for rehabilitation, which would not come until World War I, just providing prostheses was an important step that broke with the traditional pattern of providing only pensions and housing for the indigent veteran.

The effects of the Civil War shaped America for the rest of the century and beyond. Even with this substantial debt to be repaid, governments at all levels in the North established facilities to care for those disabled by the war. For their political support, the large number of Union veterans who organized themselves into politically active groups, such as the GAR, extracted a high price from the Republican Party and the Congress it controlled: increasingly generous pensions. Civil War pensions soon became the largest cost item in the federal budget.

One additional legacy of the Civil War was the movement to humanize war by establishing rules of conduct for what is essentially an inhumane activity. In February 1863, the Geneva Public Welfare Society set up a committee to explore ways to protect the sick and wounded during combat. The committee called an international conference that met in October 1863. This conference appealed to all nations to form voluntary units to help wartime sick and wounded. These units eventually became the National Red Cross Societies, under the general auspices of the International Committee of the Red Cross. Maxwell, in his history of the Sanitary Commission, observed that,

without the American experiences [Henri] Dunant’s efforts [in organizing the Congresses of 1863 and 1864] might have been fruitless. The Sanitary Commis-

sion had solved problems of cooperation between civilian volunteers and the official medical services. (Maxwell, 1956, p. 275)

This is not to say that the world's militaries were any more eager to engage civilian volunteer organizations in the 19th century than militaries today are eager to deal with the current group of international nongovernmental organizations. In fact, after the Sanitary Commission disbanded in summer 1865, its leaders created the American Association for the Relief of Misery on the Battlefield (1866–1870) to “give advice based on the Sanitary Commission’s Civil War experiences to new relief societies organized in Europe” (Rutkow, 2005, p. 324). The commission’s former leaders hoped that the United States would join with the European powers to sign the treaties that established a code for dealing with treatment of the wounded, civilians, shipwreck victims, and prisoners of war and that the code would include the need to protect ambulances, hospitals, nurses, and physicians. Foreshadowing its rejection of membership in the League of Nations after World War I, the United States “declined to become a signatory, citing the fear of American involvement in ongoing and future European wars” (Rutkow, 2005, p. 324).<sup>66</sup> Nevertheless, as a result of public pressure that Clara Barton, the founder of the American Red Cross, organized, Congress finally ratified the Treaty of Geneva on March 16, 1882, completing the work of the wartime Sanitary Commission.

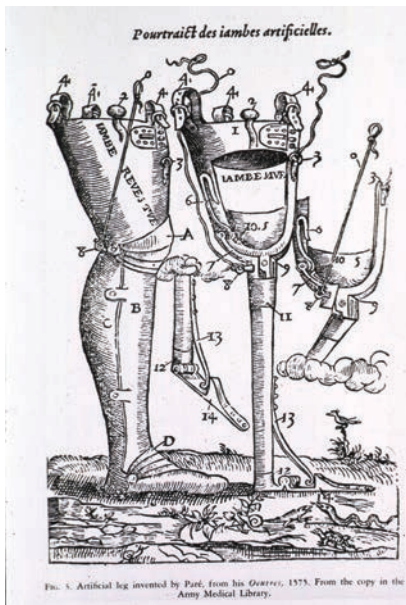
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<sup>66</sup> Secretary of State William Seward felt that it would be “unwise for the United States to become a party to any instrument to which there are many other parties,” as quoted in Dulles, 1950, p. 10.



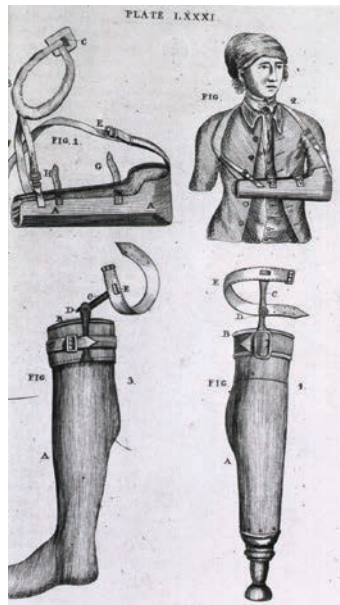
## PROSTHESES

### Early “Peg Legs”



Circa 1575, Paris: These full and cutaway views illustrate an early French attempt to create an artificial leg with knee and ankle joints.

Credit: Image from the History of Medicine at the National Library of Medicine.



1791, Massachusetts: This book illustration shows two types of artificial legs, one with a peg and one with a foot, as well as a sling for immobilizing a broken arm.

Credit: Image from the History of Medicine at the National Library of Medicine.

### Civil War



Circa 1865, New York: After losing both legs near Petersburg, Virginia, this Civil War veteran was reportedly able to walk on his prosthetic legs with the aid of two canes.

Credit: Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.



Circa 1875: One Civil War amputee was inspired to develop his own prosthesis, then founded a company to supply others like himself. The company is still in business today, some 150 years later (see its website at <http://www.hanger150.com/>).

Credit: Library of Congress, C.M. Bell Collection of Glass Negatives.



August 26, 1946: This World War I veteran's Sauerbruch cineplastic arm and Hufner hand leveraged remaining arm muscles to give limited movement and a pincerlike grip.

Credit: Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.



1944: Further improvements in prosthetics allowed the wearer to assume natural poses.

Credit: New Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.



## CARE IN THE FIELD

### *Ancients*



Ancient Greece: This illustration from a Greek drinking goblet shows one warrior bandaging another's wound. The original goblet is part of the Collection of Classical Antiquities, Berlin State Museums.

Credit: Image from the History of Medicine at the National Library of Medicine.



106–114 CE, Rome: This replica of a small section of Trajan's Column shows wounded soldiers undergoing surgery, probably with nothing more than alcohol or herbal remedies to ease their pain.

Credit: © Science Museum/SSPL.

### *Civil War*



June 30, 1862, Savage Station, Virginia: Even three days after a battle, a Civil War field hospital could be a crowded and apparently chaotic place, as this image shows.

Credit: Library of Congress Prints and Photographs, LC-DIG-stereo-1s02416.



May 2, 1863, near Fredericksburg, Virginia: Civil War soldiers also tended to one another's wounds in the field—in this case, after the battle of Chancellorsville.

Credit: National Archives, 111-B-349.





July 1863, Gettysburg, Pennsylvania: During the Civil War, battlefield surgery likely took place in tents or, as with this amputation, in the open—in less-than-sterile conditions.

Credit: National Archives, 79-T-2265.



Circa 1864, Petersburg, Virginia: Field hospitals were sprawling tent cities along newly laid rail lines. During the siege of Petersburg, rail lines were extended directly behind the Union lines to facilitate the movement of wounded soldiers to hospital ships for transport to hospitals in Washington and Philadelphia.

Credit: Reeve Photograph Collection, Otis Historical Archives, National Museum of Health and Medicine.



Circa 1864: Some of the most prominent items in any Civil War surgical kit were the tools necessary for amputations. George Tiemann & Co., which made this kit, has been in business since 1826 (see the company website at <http://www.georgetiemann.com>).

Credit: New Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.

## *World War I*



July 27, 1918, Epieds, France: Dressing stations were established as far forward as ambulances could safely reach. Here, French and American troops are arriving at the 117th Sanitary Train's dressing station.

Credit: Reeve Photograph Collection, Otis Historical Archives, National Museum of Health and Medicine.



World War I, Suippes, France: From the dressing station, the wounded went on to the triage station for further assessment.

Credit: Reeve Photograph Collection, Otis Historical Archives, National Museum of Health and Medicine.



September 20, 1918, Meuse, France: Even damaged buildings could be pressed into service in sheltering the wounded. The 110th Sanitary Train took advantage of this heavily damaged church.

Credit: Reeve Photograph Collection, Otis Historical Archives, National Museum of Health and Medicine.

## *World War II*



March 11, 1945, Philippines: During World War II, clearing stations like this one were part of the second echelon of care, providing triage and further medical aid after initial treatment at the unit level.

Credit: Museum and Medical Arts Service (MAMAS) Photographs, Otis Historical Archives, National Museum of Health and Medicine.



October 3, 1945, France: What appears to be a school auditorium has been pressed into service as an operating room and surgical ward for the 60th Field Hospital. Surgery is under way on the stage in the rear of the room.

Credit: U.S. Army Signal Corps Photographs, Otis Historical Archives, National Museum of Health and Medicine.



November 9, 1944, Vincey, France: The 51st Evacuation Hospital had a well-equipped surgical tent. Here, a patient is being prepared for an emergency operation.

Credit: U.S. Army Signal Corps Photographs, Otis Historical Archives, National Museum of Health and Medicine.



Lucca, Italy: This ward tent belonging to the 5th Army Evacuation Hospital provided cots for wounded servicemen. Note the IV bottle—supplying intravenous fluids was a World War II innovation.

Credit: Image from the History of Medicine at the National Library of Medicine.



May 8, 1944, Anzio, Italy: The sides of the ward tents of the 94th Evacuation Hospital were reinforced with earthworks.

Credit: Image from the History of Medicine at the National Library of Medicine.



# TRANSPORTATION—STRETCHER, AMBULANCE, RAIL, SEA, AND AIR

## Stretchers

### *Civil War*



1861, Manassas, Virginia: In this illustration from *Harper's Weekly*, soldiers carry a wounded man from the Bull Run battlefield. At this level of care, the scene could have been of almost any war; compare, for instance, the next two pictures.

Credit: Image from the History of Medicine at the National Library of Medicine.

### *World War I*



July 22, 1918, Vaux, France: Soldiers carry a wounded World War I soldier through the streets of a heavily damaged French city.

Credit: Image from the History of Medicine at the National Library of Medicine.

### *World War II*



Circa 1944, Layte, Philippines: Field use of intravenous fluids and blood transfusions became a fixture in World War II. Here, the bag is hanging from a rifle with its bayonet thrust into the ground.

Credit: Image from the History of Medicine at the National Library of Medicine.

## Ambulances

### *Civil War*



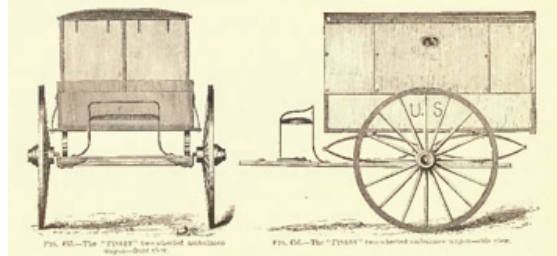
July 1863, Washington, D.C.: Ambulances were not a new concept at the start of the Civil War, but they were a recent addition to the U.S. Army. This ambulance train was at Harewood Hospital.

Credit: Library of Congress, Prints and Photographs, LC-DIG-cwppb-01354.



1860–1865: These troops are demonstrating the loading of wounded soldiers into an ambulance wagon.

Credit: Library of Congress, Prints and Photographs, LC-DIG-cwpb-03950.



1859: Before the war, the two-wheeled ambulance had been a recent invention. But four-wheeled ambulances proved to be more capable and provided a better ride.

Credit: From Otis and Huntington, 1883.



Circa 1860–1865: Inventors tried to improve what could be a very uncomfortable ride. This proposed ambulance wagon included an apparatus for suspending patients with compound thigh-bone fractures, but the design was never adopted.

Credit: From Otis and Huntington, 1883.

## World War I



FIG. 44.—Type of ambulances used by the U. S. Army Ambulance Service.

Circa 1918: World War I saw the introduction of motorized vehicles to the U.S. Army Ambulance service.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

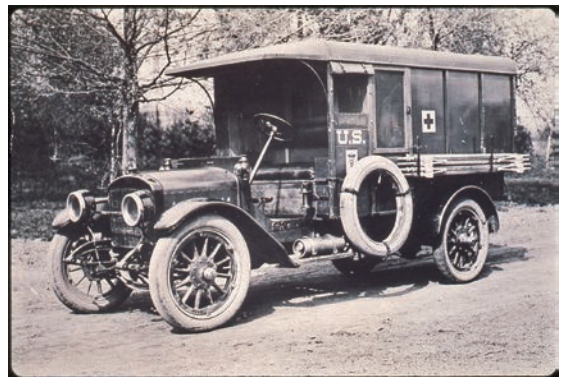




FIG. 15.—Dressing station operated by Ambulance Company No. 137, Amperbach, Alsace, August 31.

August 31, 1918, Amperbach, Alsace: Ambulance Company No. 137 used this vehicle for its dressing station.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).



World War I, Washington, D.C.: This ambulance served patients at Walter Reed General Hospital.

Credit: Walter Reed Army Medical Center Garrison Directorate of Public Works Archive.



April 26, 1918, Bertrichamps, France: Even though motorized vehicles were in use, mule-drawn wagons continued to serve as ambulances. These are shown at a 117th Sanitary Train field hospital.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).



World War I, Beau Desert, France: These wounded men are about to be evacuated by ambulance.

Credit: New Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.

## World War II



January 9, 1945, Europe: Not all ambulances were trucks. In this case, jeeps have been fitted with frames above their hoods to accommodate the wounded on litters.

Credit: U.S. Army Signal Corps Photographs, Otis Historical Archives, National Museum of Health and Medicine.



February 12, 1944: These ambulances belonged to the 109th Clearing Station.

Credit: New Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.

## Trains

### Civil War



1944, Italy: These American Field Service vehicles are delivering patients from the Monte Cassino battlefield to a camouflaged Polish dressing station behind British 8th Army lines.

Credit: Courtesy of the Archives of the American Field Service and AFS Intercultural Programs.



1864: In the Civil War, the wounded began to be transported by train. To reduce jostling, specialized cars came to include beds suspended from India-rubber bands, as in this illustration from *Harper's Weekly*.

Credit: Image from the History of Medicine at the National Library of Medicine.



## *World War I*



Circa 1918, Toul, France: Trains continued to be important for transporting the wounded in World War I. Here, a patient is being carried into a hospital train car.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).



FIG. 80.—Hospital unit car in use.

Circa 1918: This photograph shows a hospital car in use.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

## Hospital Ships

### *Civil War*



Circa 1861–1865, Alexandria, Virginia: Another Civil War innovation was the use of steamships both as hospitals and transportation. This hospital steamer is the *State of Maine*.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

### *World War I*



December 19, 1929: The USS *Solace* was a World War I hospital ship originally commissioned April 14, 1898. She was decommissioned in 1921.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

## World War II



Circa 1918, Loire Inférieure, France: In this image, patients are being unloaded from ambulances to be taken aboard a hospital ship, the USS *Mercy*.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).



March 1944, South Boston: Hospital ships, like the USS *Chateau Thierry*, seen here, had to be clearly marked to ensure being identified as noncombatants.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).



World War II, Guam: The second U.S. hospital ship to be christened *Solace* survived Pearl Harbor and went on to serve those wounded in the Pacific. Here, she delivers a wounded Marine to Guam.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

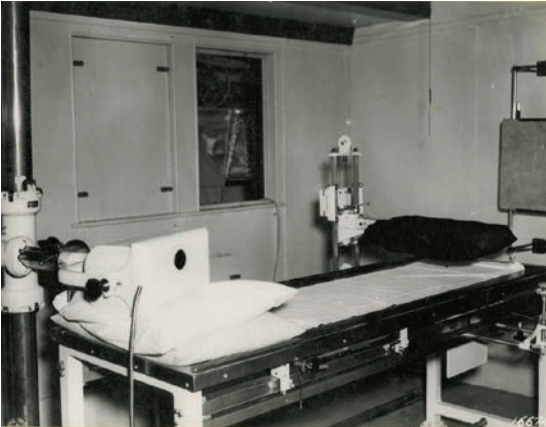


Circa 1945: The USS *Haven*'s first contingent of patients, in July 1945, consisted mostly of neuropsychiatric and tuberculosis patients being sent from Pearl Harbor to San Francisco.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

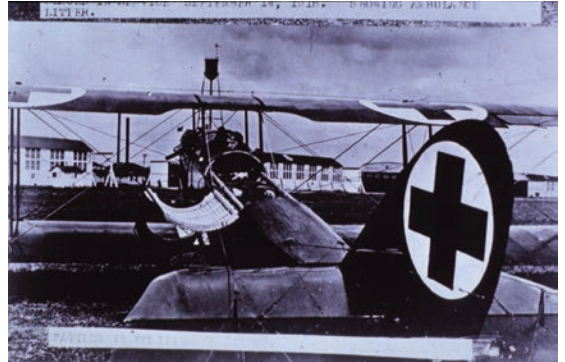
## Air Evacuation

### *World War I and 1930s*



December 12, 1942: Hospital ships featured all the amenities of the modern hospital, including x-ray facilities.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).



September 14, 1918, Belleville, Illinois: Even though aviation was in its infancy, aircraft first began to transport wounded soldiers during World War I. The earliest experiences, as this photo suggests, would likely have been harrowing.

Credit: Image from the History of Medicine at the National Library of Medicine.

### *World War II*



Circa 1919: This Fokker Y1C-15 was transformed into an air ambulance for the U.S. Army.

Credit: Image from the History of Medicine at the National Library of Medicine.



March 29, 1944, Maingkwan, Burma: The casualties being loaded into this World War II air ambulance had been wounded less than 24 hours earlier. Air travel greatly speeded transport of soldiers needing more-advanced care.

Credit: Museum and Medical Arts Service (MAMAS) Photographs, Otis Historical Archives, National Museum of Health and Medicine.





World War II, Manila, Philippines: This C-46 was outfitted to evacuate the maximum number of patients.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

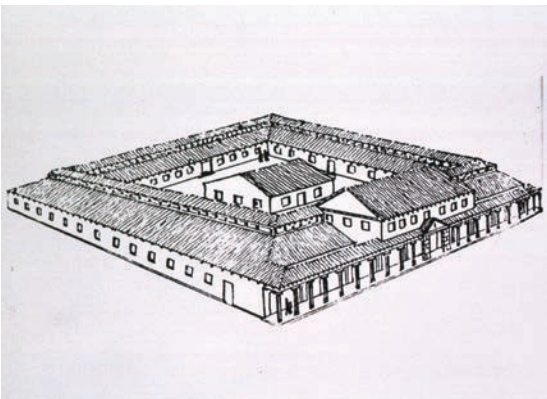


March 20, 1944, Maingkwan, Burma: Members of the 151st Medical Battalion load patients onto an air ambulance.

Credit: Museum and Medical Arts Service (MAMAS) Photographs, Otis Historical Archives, National Museum of Health and Medicine.

## GENERAL HOSPITALS

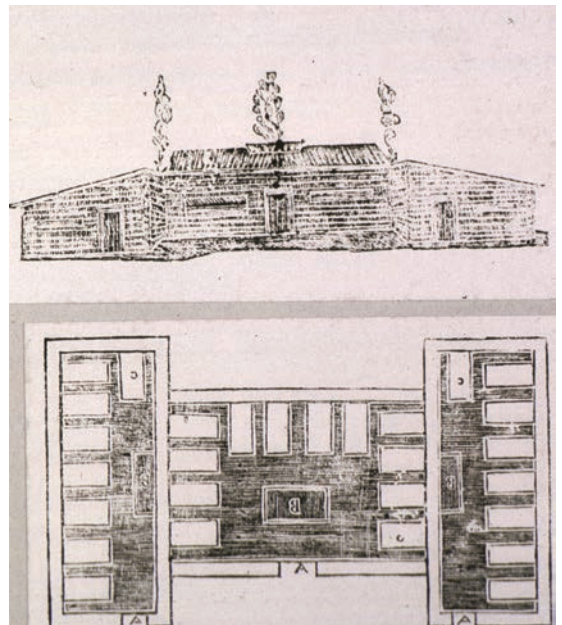
### *Ancient*



Ancient Rome, Windisch, Switzerland: Large Roman military camps could include hospitals, similar to the reconstruction shown here.

Credit: Image from the History of Medicine at the National Library of Medicine.

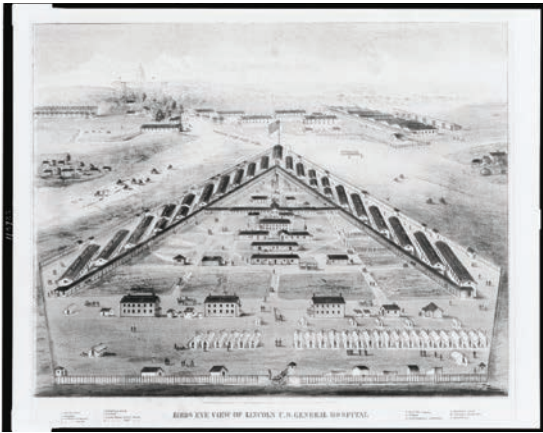
### *American Revolution*



1780, Morristown, Pennsylvania: This drawing shows the plan of Tilton's Hospital, designed during the Revolutionary War. The same name was used for a general hospital during World War II, which was considerably larger.

Credit: Image from the History of Medicine at the National Library of Medicine.

## Civil War



1865, Washington, D.C.: Lincoln General Hospital was the largest military hospital in the Washington area.

Credit: Library of Congress, Prints and Photographs, cph.3c10921.



Civil War, Washington, D.C.: This ward in the Lincoln Hospital featured a fanning machine to help cool patients. It took one man to operate.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

## Spanish-American War



Circa 1890, Mount Vernon Barracks, Alabama: This post hospital was built just outside the main entrance to the barracks.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

## World War I



FIG. 17A.—General Hospital No. 11, Cape May, N. J.

1918, Cape May, New Jersey: This U.S. Army hospital began life as the Hotel Cape May.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).





FIG. 102.—Two-story wards constructed of tile. General Hospital No. 2.

Circa 1918, Baltimore, Maryland: General Hospital No. 2 was at Fort McHenry. Buildings added in spring 1918 featured steam heat and other modern amenities.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).



FIG. 26.—Interior of typical one-story ward of temporary construction.

Circa 1918: Capacities for new wards varied from 14 to 100 beds, but did not look that much different from the Civil War hospital wards seen before.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

## World War II



McGUIRE GENERAL, A VA-TYPE HOSPITAL.

Circa 1944, Richmond, Virginia: McGuire General Hospital is an example of a hospital built during World War II that was converted to postwar use. Almost all such hospitals were turned over to the VA after the war.

Credit: Photo from U.S. Army Medical Department Office of Medical History website. This commercial publication incorporates United States Government works (17 USC 403).

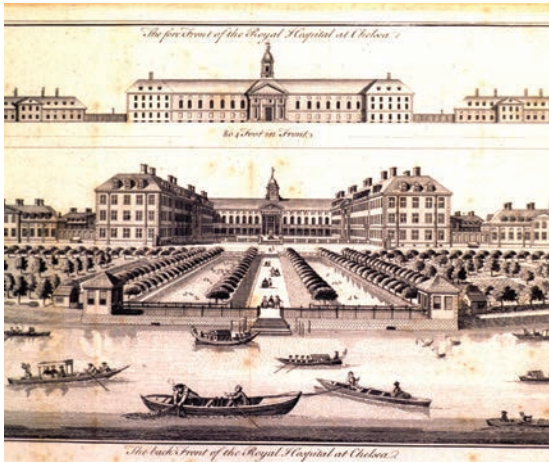


World War II, Fort Dix, New Jersey: As the scope of war expanded, so did the size of the hospitals needed. This is an aerial view of the U.S. Army's Tilton General Hospital, which carried the same name as the Revolutionary War hospital seen before.

Credit: Image from the History of Medicine at the National Library of Medicine.

## CARE FOR THE DISABLED

### *Hospitals and Homes*



Late 17th century, London: One of the oldest military hospitals was the Royal Hospital at Chelsea, built for the welfare of old or disabled soldiers. Sir Christopher Wren designed and erected the buildings.

Credit: Image from the History of Medicine at the National Library of Medicine.



Late 17th century, Paris: From its inception under Louis XIV, l'Hôtel des Invalides was primarily a home and hospital for elderly or invalid former soldiers. While the complex still has a small hospital facility to this day, the old pensioners' quarters now house the Museum of the Army.

Credit: Kadellar, licensed under the Creative Commons Attribution-ShareAlike 3.0 Unported license.



April 1865, Washington, D.C.: During the Civil War, this Sanitary Commission Home Lodge for Invalid Soldiers provided food, lodging, care, etc., typically for the discharged, disabled, and furloughed in transit. Such homes mostly closed at war's end.

Credit: Library of Congress, Prints and Photographs, LC-DIG-cwpb-04160.





Circa 1909, Leavenworth, Kansas: The National Homes for Disabled Volunteer Soldiers, of which the Western Branch is pictured here, started up after the Civil War. Eligible disabled former Union soldiers and sailors could enter and leave at will. Such federally financed facilities were not open to Confederate veterans, even though they paid taxes to the federal government.

Credit: Library of Congress, Prints and Photographs, pan.6a10600.



Late 19th century, Washington, D.C.: The Soldiers' Home was established to care for old and disabled veterans who met certain criteria. The home was funded through a monthly payroll deduction from serving soldiers, as well as fines and forfeitures.

Credit: New Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.



Early 1930s, Salt Lake City, Utah: This VA hospital opened on July 5, 1932, with 104 beds, later expanding to 204. In 1946, it became affiliated with the University of Utah's College of Medicine. The facility was closed in 1962 when a new hospital was built.

Credit: Photo courtesy VA Salt Lake City Health Care System.

## From the Civil War to the World War

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Even with the demands of Reconstruction in the South, the authorized manpower for the Regular Army in November 1866 was only 54,000.<sup>1</sup> The Army Medical Department largely returned to its prewar structure, size, and function. By the end of 1865, only 97 soldiers remained in Army hospitals, down from an estimated population of 65,000 just six months earlier. Regular and contract surgeons declined from 1,997 (July 1865) to 217 medical officers and 264 contract surgeons in July 1866. The Medical Department disbanded the ambulance corps; closed supply depots; and sold or otherwise disposed of hospital transports, hospital trains, and general hospitals. Some institutions were turned over to individual states for use as homes for wounded veterans (Gillett, 1994, p. 11). During Reconstruction, the size of the Army continued to decline. In 1871, the strength was reported as almost 32,000. The Compromise of 1877, which settled the disputed presidential election of that perilous year, saw the final removal of federal troops from South Carolina, Florida, and Louisiana; the following year, the strength of the Army fell to a little under 23,000. Typically, these men were stationed in more than 100 posts in the western half of the United States—in 1889, there were 134 posts, the largest of which had 700 men; one-third had an average strength of only 60 men (Ashburn, 1929, p. 142). In addition to supporting the men of the Regular Army, the Medical Department provided Civil War veterans with prostheses and the information needed for pension applications. They cared for veterans living in the Soldiers' Home in Washington, D.C., and for a brief period, also managed the medical care of freed slaves.

### The Indian Wars on the Frontier

Between 1865 and 1890, the Army's primary responsibility was subduing the Indians, as it had been before the Civil War. Medical services reverted to their prewar organization "with a Surgeon General in Washington, a medical director in each geographical

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<sup>1</sup> The "strength present" of the Union Army on March 1, 1865, was 569,720, as reported in Woodward, 1870, p. xl.

department, and a post surgeon, with perhaps an assistant or two, a hospital steward, at each military post” (Lynch, Weed, and McAfee, 1923, p. 44). Most garrisons were small, isolated forts in the west. Troops generally were involved in minor guerilla engagements that placed a premium on mobility and resulted in few casualties. Between 1871 and 1879, the death rate ranged between 17.7 and 11.5 per thousand soldiers, with the exception of 1876, when Custer’s command was massacred at the Little Big Horn River in Montana. In that year, the death rate was 23 per thousand (Ashburn, 1929, p. 113).

Post surgeons were principally occupied caring for the sick. In spite of the Medical Department’s efforts to prevent illness, Army physicians still encountered a high rate of disease, with frequent epidemics of cholera and yellow fever. Yearly discharge rates typically averaged about 32 per thousand soldiers, mainly from the effects of rheumatism, venereal disease, heart disease, alcoholism, hernia, epilepsy, dysentery, and chronic respiratory disease. In surgery, as in preventive medicine, the period was one of transition. For many years after the Civil War, physicians did not appreciate the implications of the germ theory and the benefits of antisepsis that would eventually produce a major change in how medical officers approached surgery. In these years, the sanitary condition of the Army was appalling. Barracks were frequently overcrowded, and little attention was paid to the need for such essentials as bathrooms and proper diet. Between 1868 and 1874, the Army reported 632 cases of scurvy.<sup>2</sup>

By the 1890s, the discovery of the causative agents for dysentery, gonorrhea, typhoid fever, malaria, tuberculosis, erysipelas, cholera, diphtheria, and tetanus enabled doctors to develop more effective and efficient approaches to sanitation. The drive to prevent disease, coupled with the realization that insects might in some manner spread cholera and other diseases, led to the realization that window screens might be more than a mere luxury.

Progress in surgery also moved ahead slowly. Traditionally, the simplest operations were avoided because of the fear that infection might follow the surgery. As a result, soldiers with hernias, for example, were generally discharged rather than operated on to repair the hernia. The Army officially adopted antiseptic surgery in 1877; however, of the 179 surgical procedures performed in 1884, only five used antiseptics (Ashburn, 1929, p. 137). By 1886, antiseptics were used in 60 of 168 surgical operations (Ashburn, 1929, p. 139). When the Army launched into the Spanish-American War, “the [medical] department had not yet had sufficient time to create all the laboratories, to acquire all the equipment, and to train all the men needed to meet the new expectations” (Gillett, 1994, p. 112).

Despite the quiescence of this period, there were several notable advances, particularly the establishment of the Hospital Corps (1887) and the Army Medical School

<sup>2</sup> The poor health conditions are discussed in Ashburn, 1929, pp. 129–133.

(1893).<sup>3</sup> By establishing the Hospital Corps, Congress provided for hospital stewards and privates whose sole duty would be to care for sick and wounded soldiers. This replaced the system that “detailed cooks, nurses, and civilian personnel,” soldiers from line (combat) units, and sometimes patients themselves to staff military hospitals. A later review of the *Evolution of the Medical Department* would note:

The organization of a hospital corps was of basic importance, and its influence on the subsequent history of our Medical Department must not be overlooked. Before this was done, it was impossible in peace, to make any real preparation for war, as the Medical Department had had no men to train, and in the absence of them there was a consequent limitation of the training of medical officers in this respect, since instructors learn by teaching. (Lynch, Weed, and McAfee, 1923, p. 45)

The establishment of the Army Medical School in 1893 continued the professionalization of the Medical Department. The purpose of the school was to “supplement the professional knowledge of newly entered medical officers of the Regular Establishment in order to fit them for Army practice and to give them some idea of routine duties at posts” (Lynch, Weed, and McAfee, 1923, p. 67). While the number of medical officers trained was very small, varying from five to eight in the early years, it was part of a more-general program that allowed medical officers to do postgraduate work in large civilian hospitals.

## The Spanish-American War

The medical reforms of the 1890s—the Hospital Corps, the Army Medical School—and the Army Medical Department were tested during the Spanish-American War of 1898.<sup>4</sup> When war was declared, Congress increased the size of the Regular Army from 27,000 officers and men to just under 65,000 (Gillett, 1995, p. 118). It also called for volunteers, and eventually, more than 223,000 filled the ranks (Corbin, 1899). The Dodge Commission inquiry after the war found that the “Medical Department could not have been worse handicapped by mere neglect of its needs . . . because it cost money and was looked upon as a non-combatant branch of very little importance” (Ashburn, 1929, p. 176). The official Army history recounts that, when war was declared, the department lacked the plans, personnel, equipment, and effective doctrine necessary to support an army in the field. Mobilization efforts of the Army’s Medical Department focused on the shortage of trained and experienced doctors, stewards, and hos-

<sup>3</sup> On the eve of the World War I, the Hospital Corps consisted of 199 hospital stewards and acting stewards and 592 privates (Ashburn, 1929, p. 165).

<sup>4</sup> As reported by the Dodge Commission, which was appointed by President McKinley in 1898 to review the conduct of the war and discussed in Ashburn, 1929, pp. 161–182.

pital attendants. The Medical Department's regular officers had little experience in preventing disease, and none were familiar with the problems of mounting an overseas expedition. The callup of the National Guard did not help, because "many physicians with state units were barely competent, if that, in civilian life, although some, . . . had received advice and instruction from Regular Army medical officers in the period before 1898" (Gillett, 1994, p. 120).

Since the Civil War, the Medical Department had been organized to serve scattered Army posts in the West and did not prepare the Army for a global expeditionary campaign. The old arguments concerning the relative merits of the regimental hospital over a larger facility, which dated back to the days of the Continental Army, were again heard because troops were mobilized by regiment, and each regiment arrived with its own medical staff. Army physicians and the civilian doctors and nurses that were hired to fill the ranks soon found that, in the tropics of the Caribbean and the Philippines, their biggest problem was not caring for the relatively small number of wounded soldiers, but disease.<sup>5</sup> Malaria and typhoid posed the greatest threats to the troops in Cuba, but the most dreaded disease during the Caribbean campaign was yellow fever. The wounded invariably did well because, by 1898, physicians knew how wounds became infected and because the precautions necessary to prevent wound infection were easy to take. In the prevention of disease, however, the war marked the last gasp of a long dark age.<sup>6</sup>

Disease ravaged the troops in the United States and overseas. Typhoid spread through camps where few understood the necessity for high standards of sanitation. Disease and death rates eventually climbed so high that the Army Surgeon General appointed a board of medical officers to investigate the cause of the epidemic. The head of the Typhoid Board was a 47-year-old officer, Major Walter Reed. The Typhoid Board reported that, despite popular opinion,

[p]olluted water played only a minor role in the spread of typhoid. . . . [and the] spread of the disease also resulted from the failure to segregate those diagnosed as

<sup>5</sup> According to U.S. Army Medical Department, 2011, p. 4:

At the onset of the Spanish-American War, the Surgeon General requested and promptly received congressional authority to appoint women nurses under contract. . . . For the most part, only graduates certified by approval of nursing school directors were accepted for appointment under contract to the Army. Many of the nurses were of the religious orders Sisters of Charity, Sisters of Mercy, and Sisters of the Holy Cross. Other nurses were obtained through the assistance of the Red Cross Society for the Maintenance of Trained Nurses in New York. Military nursing achieved a high level of professional competence. These military nurses became known as "contract nurses" of the Army. Slightly more than fifteen hundred women nurses signed government contracts.

<sup>6</sup> Nonbattle casualties accounted for the vast majority of deaths during the Spanish-American War. The casualty rate, including dead and wounded, was 1.4 percent, with 4.3 times more being wounded than dying in battle. In fact, more soldiers died from nonbattle causes than the total battle casualties, deaths and wounded combined. The total number of battle casualties was 1,963, and the total number of nonbattle deaths was 2,061 (Adkins, 1967, p. 81).

having typhoid from other patients. . . . The board concluded that immunization might be a more effective approach to preventing typhoid in the Army than sanitation alone. (Gillett, 1994, p. 192)

Care for the veterans of the war was guaranteed when Congress gave all those serving the same benefits that the Regular Army enjoyed. Following the well-established pattern, service pensions were extended after the war to the widows and under-age children of deceased Spanish-American War veterans in 1918, and a graduated system of old-age pensions was initiated, starting at age 62 and increasing to age 75, in 1920 (Adkins, 1967, p. 82).

## The American Empire

While the Spanish-American War was over almost before it got started, the defeat of Spain and the emergence of the United States as a world power were long lasting, ushering in new challenges for the Army and its Medical Department. The nature of service changed entirely after 1898. Before then, serving in the Army and in the Medical Department meant service at a small post somewhere in the west. After 1898, service most likely was overseas in a world environment. Beginning in spring 1899, the Army faced guerrilla warfare in the Philippines and was soon engaged in China against a secret society, the Boxers. By one account, the medical officers “faced challenges rendered more demanding than those of the Indian wars both by the complexities of the campaigns and by the tropical climate and its diseases” (Gillett, 1994, p. 201). Disease caused most disability and death among troops fighting in the Philippines. Combat injuries took only 10.6 percent of the command out of action in the first half of 1900 (Gillett, 1994, p. 216).

Advances in medical knowledge by the turn of the 20th century enabled Army physicians to make rapid progress in reducing the incidence of disease among the troops. Before the medical revolution, the Army’s physicians could rely only on sanitation to prevent epidemics. By the turn of the century, the development of new vaccines gave physicians the ability to prevent many of the most deadly diseases. Most notable was an outbreak of yellow fever in Cuba in 1899, which inspired one of the finest periods in military medicine. In 1900, the Surgeon General appointed the Yellow Fever Board to study infectious diseases in Cuba. Major Reed headed the board. The board’s work was important not only for soldiers serving in the tropics but also for the whole country. In the United States, yellow fever took more than 100,000 lives between 1793 and 1901 (Gillett, 1994, p. 239). The Yellow Fever Board solved the mystery of how yellow fever spread and put many misconceptions to rest. Before the board’s work, yellow fever was thought of as a “filth disease,” one caused by poor sanitation. The board proved that expensive and time-consuming disinfection of clothing and bedding served no useful purpose because *mosquitoes* spread yellow fever. The board’s recom-



mendations eventually led to the successful campaigns to control the mosquito population and, thereby, yellow fever.

## The Transformation of the Army Medical Department

After the Spanish-American War, President William McKinley appointed the Dodge Commission to “investigate the conduct of the war” (Lynch, Weed, and McAfee, 1923, p. 57). Among the commission’s recommendations were that there be a large force of commissioned medical officers, a reserve corps of medical officers and nurses, and a year’s worth of medical supplies “for an army of a least four times the actual strength.”

Reform of the Army is most associated with the tenure of Secretary of War Elihu Root. Under his direction, the Army Reorganization Act of 1901 not only created a general staff, headed by the Chief of Staff, it also authorized the Nurse Corps.<sup>7</sup> Soon, a series of field-service regulations standardized unit structures in tables of organization. Regulations addressed the assignment of medical personnel and the allocation of ambulance companies and field hospitals. They provided for evacuation and treatment of wounded soldiers by organizing four ambulance companies and four field hospitals per division, with 28 medical personnel assigned to each regiment. New medical manuals not only laid out a permanent structure, they established a system to move the wounded from the battlefield, to battalion aid stations, to field hospitals, and then to permanent hospitals. The new system was tested in field maneuvers in 1903, 1910, and 1913 (the last when the Army occupied Vera Cruz, Mexico). In 1916, the deployment of medical units to support General John Pershing’s campaign along the Mexican border was a precursor of the deployments to Europe that were to come.

The Medical Department’s reorganization in spring 1908 increased the number of Army medical officers; half the increase was in the field grades. This restored “a reasonable chance for medical officers’ advancement” (Jaffin, 1990, p. 16). For the first time, Congress authorized the Medical Reserve Corps, the forerunner of the entire United States Army Reserve. By the end of 1909, the Medical Reserve Corps had recruited 180 physicians, with 1,757 enrolled by 1916 (Jaffin, 1990, p. 17). When war came in 1916, the Reserve and National Guard also provided a mechanism for commissioning applicants without resorting to contract surgeons, as had been necessary in the Spanish-American War. When the World War I ended on Armistice Day 1918, the Army Medical Department employed over one-quarter of all physicians practicing in the United States.

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<sup>7</sup> While nurses were appointed in the Army for a three-year period, they were not actually commissioned as officers in the Army until April 16, 1947 (see U.S. Army Medical Department, 2011). Sarnecky, 1999, p. 24, associated the acceptance of professional nurses to the “growing interest in the germ theory and the advent of antiseptic surgery . . . [and] the increasingly sophisticated level of care requir[ing] a better-educated and dedicated nurse.”

A reserve corps for nurses came about in another way. The Army's Superintendent of Nurses, Dita H. Kinney, envisioned the reserve corps coming from the American Red Cross. In 1912, she resigned and organized the American Red Cross Nursing Service. Within a year, 4,000 nurses had signed up; on the eve of World War I, 8,000 had registered. Eventually, the Red Cross provided the Army with more than 20,000 nurses.

## War in Europe

As war erupted in Europe in 1914, few in the United States expected to be drawn into an overseas conflict unless the territories acquired in the Spanish-American War were threatened. By 1916, things had changed, and President Woodrow Wilson prepared the nation for war. Testimony from the Surgeon General in January 1916 highlighted the fact that the Army Medical Department had not grown since 1908, even as the Army was half again as large. The National Defense Act of 1916 made significant improvements, replacing the Hospital Corps with a Medical Corps and authorizing enlisted medical personnel as a fixed percentage of Army end strength, thereby ensuring that medical personnel would grow automatically as the overall size of the Army increased.<sup>8</sup> The act laid out the requirement for sanitary trains as part of a division unit; routinized the appointment and promotion of medical, dental, and veterinarian officers and nurses; established the Regular Army Reserve, an Officers' Reserve Corps, the National Guard, and the National Guard Reserve; specified how the National Guard could be drafted into federal service; and specified how military supplies could be acquired in time of "actual or imminent war" (Lynch, Weed, and McAfee, 1923, pp. 75–80). On the latter point, the Mexican border mobilization provided the experience that the Army drew on when war finally came (Lynch, Weed, and McAfee, 1923, p. 83).

The Medical Department's history of World War I recorded that its "early arrangements . . . were influenced to a considerable extent by what we had learned before we entered the war, from the experience of our future allies and enemies" (as quoted in Gillett, 1994, p. 404). Particularly noteworthy were reports from American physicians in France,<sup>9</sup> and the reports of Major Thomas W. Salmon and Colonel James Robb

<sup>8</sup> The National Defense Act of 1916 also established a separate Veterinary Corps and placed it in charge of all food inspections (Greenwood and Berry, 2005, p. 58).

<sup>9</sup> A team of nurses from Lakeside Hospital in Cleveland arrived in Paris in early January 1915 and laid the organizational and professional treatment ground work for all American surgical teams when the United States entered the war in 1917. Crile, 1915, pp. 29–30, describes nervous breakdowns, concussive artillery wounds, and the interaction of fear, pain, and how "emotion overcomes pain."

Church influenced the way the army prepared for war.<sup>10</sup> Important lessons came in four areas: the establishment of hospitals, understanding of the psychological consequences of modern warfare, amputations, and the establishment of rehabilitation programs for the physically and mentally impaired to enable them to function as independently as possible in the postwar society.

### Lessons About Military Hospitals

In 1914, in a move reminiscent of the Sanitary Commission of the Civil War, Congress codified the role the Red Cross would play “in time of actual or threatened war” by authorizing the President to accept assistance from the Red Cross to provide sanitary supplies and personnel to the Armed Forces.<sup>11</sup> By spring 1916, the American observers in Europe concluded that the nation could not wait until it entered the war to form a system of military hospitals. With war raging in Europe and a growing preparedness movement in the United States, the leaders of the major organizations of physicians and surgeons met in Chicago to form the Committee on Medical Preparedness. President Wilson accepted their offer to survey “the medical resources available to go to war to include a list of men trained in the various specialties, of nurses, and of equipment” (Jaffin, 1990, p. 27). The president also established the Council of Medical Preparedness, which included the Surgeon General of the Army, the Surgeon General of the USPHS, and the Director General of the American Red Cross’s Department of Military Relief, to foster the integration of the Medical Department with the civilian medical community. Given its congressional charter, it was soon agreed the American Red Cross would raise and equip the hospital units along military lines, and when these units were mobilized, they would become a part of the Army.

The Army and Red Cross planned to raise 38 base hospitals of 500 beds apiece initially.<sup>12</sup> Shortly after the United States declared war, the Medical Department expanded this to 50 hospitals. In addition to the base hospitals for the Army, the Red Cross raised eight 250-bed base hospitals for the Navy (Jaffin, 1990, p. 28).

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<sup>10</sup> These men published their observations in 1917 and 1918, respectively; see Salmon, 1917, and Church, 1918. In the forward to Col. Church’s 1918, book, the Army Surgeon General noted that this “information . . . will be of value to Medical and line officers as they go abroad on active duty with troops in France” (p. 7). In addition, Dr. Woods Hutchinson, armed with letters of introduction from the Secretary of War, visited England from January 15 to December 24, 1917. He noted that the letters helped him secure “permission to see almost everything of any value, or interest from the medical and public health points of view” (Hutchinson, 1918, p. v).

<sup>11</sup> Ashburn, 1929, p. 250 notes: “Eventually fifty . . . large hospitals were organized [by the Red Cross] and . . . all but one were sent overseas, where they constituted the backbone of the American hospitalization system.”

<sup>12</sup> One of these teams was from Lakeside Hospital in Cleveland, Ohio, under the direction of George Crile, who had conducted the first blood transfusion in 1908 and worked with the *Ambulance Americaine* in establishing a hospital in France as early as 1914. In 1917, when America entered the war, Crile noted with pride that Lakeside Hospital, “had the honor of being the First American contingent of the US Army to serve in the First World War” (Crile, 1947, p. 275).

### Lessons Concerning the Neuropsychiatric Wounded

By early 1917, the nation's leading psychiatrists had formed the National Committee for Mental Hygiene to study the possible neuropsychiatric needs of the U.S. Army in the event that our country entered the war (Bailey, Williams, and Komora, 1929, p. 5). The group first examined the care and treatment of soldiers deployed to the Mexican border. They noted the high incidence of mental disease in the Army, which they estimated to be three times as prevalent as among the civilian population of New York State. They suggested that "some special provisions . . . be made for the diagnosis and care of such patients." They told the Surgeon General that such a move

would not only facilitate more rapid and more complete recovery from psychoses but would remove disturbing elements from the general wards, assist in making important decisions regarding discharges and retirement, and release the regular medical officers for duties for which their training [had] more specifically fitted them and which they all say are more congenial. [And a] recent report from a French military neuropsychiatric unit states that many soldiers, after a neurotic invalidism lasting for months in the general hospital, were returned to the colors in from two to three weeks when treated in these units.<sup>13</sup>

A second field visit was soon scheduled, with a trip to Europe. By June 1917, with support from the Rockefeller Foundation, Dr. Salmon wrote a series of recommendations that, even years later, were characterized as "definitive and practical. . . . Even more significant were Salmon's observations concerning the effect of psychic wounds upon troop morale" (Strecker, 1944, p. 386). Salmon's observations concerning the changing views on mental and nervous disorders set the stage for the American effort that was to follow. The Army's history of the period highlighted

the changing points of view in England and France, brought about by the war, with regard to mental and nervous diseases in civil as well as in military life. Whereas mental illness had been almost wholly ignored and the medical advances before the war dealt almost exclusively with physical diseases, the wide prevalence of neuroses among soldiers was apparently leading to a revision of the medical and popular attitude toward mental and functional nervous diseases, and stimulating widespread interest in their observation and study. (Bailey, Williams, and Komora, 1929, p. 8)

### Lessons About Amputations

The three years the allies fought Germany to a stalemate provided important opportunities to improve medical and surgical procedures and gave the United States valuable experience with which to revise its standards of medical care. Allied doctors soon

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<sup>13</sup> The April 12, 1917, report of the committee of the National Committee for Mental Hygiene is reproduced in Bailey, Williams, and Komora, 1929, pp. 488–496.

learned that they had to revise standard procedures to cope with the horrendous conditions of trench warfare. New procedures, such as irrigating wounds and taking daily smears to count bacteria to determine when to close wounds, proved most effective.<sup>14</sup> Direct blood transfusions became routine.

Initially, amputation rates for wounded arms and legs were as high as 40 percent but eventually dropped below 10 percent as the allies learned to control infection. By 1917, allied medical teams had abandoned the traditional practice of prophylactic amputations for all compound fractures; still, more than 500,000 amputations took place during the war.<sup>15</sup>

### **Lessons About the Rehabilitation of Wounded and Neuropsychiatric Patients**

The countries on both sides of the conflict had developed “elaborate” systems to allow the wounded to return to full or limited military service or at least to sufficient physical fitness for them to make a living. The British Inspector General for Orthopedics was instrumental in establishing 17 rehabilitation centers. These set such an example that, after the war, the U.S. Army found that

[n]o pioneer road was left for us to follow with respect to the physical reconstruction and vocational reeducation of our wounded or otherwise disabled soldiers and sailors. It was left for us merely to select a plan and to modify it to meet our needs. (Crane, 1927, p. 2)

## **The Legacy**

Arguably, the period that saw the greatest changes in both general and military medicine was that between the Civil War and World War I. General advances in the science of medicine saw dramatic reductions in the incidence of and mortality from disease. Dramatic changes in the understanding of the pathology of wounds and the development of new procedures for antiseptic surgery increased both the domain of surgeons and the survival rates they could obtain. Organizational changes and the ability to observe and learn from the experiences of three years of war in Europe before the first American troops arrived to engage in World War I enabled the Army Medical Department to better prepare for the coming conflict.

<sup>14</sup> The bacterial smears were examined in mobile bacteriology laboratories attached to hospitals. See Gabriel and Metz, 1992, p. 240.

<sup>15</sup> The British alone suffered 240,000 total or partial leg or arm amputations among the 1.65 million soldiers wounded (Simkin, undated a).

## The World War

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During World War I, the United States had more citizens under arms than had fought in all its wars to that point.<sup>1</sup> For the European powers, this was a global war, but for the United States, the focus was on Europe. The American Expeditionary Forces (AEF) were transported to Europe to support the Allies on the Western Front, the area along the Franco-German border. This was a new kind of war that made use of the new technologies of communication (telephone and wireless), transportation (motorized ambulances and trucks, railways, and steam ships), combat vehicles (armored cars, tanks, and aircraft), and even barbed wire. The basic building blocks of the infantry formations moved from companies of about 100 men to squads of ten men, under the command of a junior noncommissioned officer. Chemical weapons, such as chlorine, mustard gas, and phosgene, were in widespread use. Artillery underwent a revolution with the advent of the recoil mechanism and quick-firing, breach-loading cannons, which increased lethality and rendered “the linear tactics [of the previous century] obsolescent” (Dupuy, 1980, p. 297). The new terror weapon of the age was the machine gun, characterized by one historian as “one of the most significant of all advances in lethality since the introduction of gunpowder” (Dupuy, 1980, p. 293). But it was a war, also, of stalemate. Despite the advances in technology, neither side could gain an advantage.<sup>2</sup> At the battle of Verdun, artillery fire caused at least 70 percent of the approximately 800,000 casualties that both sides suffered, but the front itself did not change appreciably. Trench warfare on the Western Front became a “hell” where hundreds died for each yard gained.

Casualties, rather than territory conquered, best describe the war the United States entered in 1917. At the battle of the Somme in 1916, the cost of pressing the front line forward 6 miles was 420,000 British and 200,000 French casualties. Holding the advance to just 6 miles cost the Germans 500,000 casualties. At the battle

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<sup>1</sup> During the Civil War, 2,213,363 combatants served the Union side, compared with 4,734,991 during World War I (Greenwood and Berry, 2005, pp. 43 and 76, respectively).

<sup>2</sup> It was not a single technology, but the combination of many, that caused the stalemate on the Western Front. Different historians emphasize the contributions of the machine gun, artillery, and barbed wire. See Raudzens, 1990, pp. 417–422.



of Verdun, the French lost 61,000 killed, 101,000 missing, and 216,000 wounded. German casualties were recorded as 434,000.<sup>3</sup> However, by the time AEF saw large-scale combat, this had started to change. While U.S. casualties were significant, they never approached the levels that had been common during the years of trench warfare on the Western Front.

What the Americans brought to this war was not new technology or new tactics or great generalship, but fresh troops. The first employment of U.S. ground forces in any scale was in May 1918, when the 1st Infantry Division took Cantigny. When American troops in large numbers were rushed to the front, the German spring offensives (March through July 1918) had failed, leaving the German army exhausted and exposed. The battle of Saint-Mihiel (September 12–15, 1918) and the Meuse-Argonne Offensive (September 26–November 11, 1918) were the principal U.S. actions of the war. American forces attacked less-prepared defenses and less-capable German forces.<sup>4</sup> Thus, rather than being constantly bombarded in attacks against prepared German defenses, which the allies had endured during the worst years of trench warfare, U.S. troops took most of their casualties while on the offensive; the majority of the casualties came from bullets, not artillery shells.<sup>5</sup>

## A New Paradigm for Caring for Soldiers and Veterans

General Pershing, AEF Commander in France, addressed Congress the year after the armistice: “Our success in the war was not due to our forethought in preparedness, but to exceptional circumstances which made it possible to prepare after we had declared war” (as quoted in Ashburn, 1929, p. 324). Pershing’s comments notwithstanding, when Congress declared war on Germany in 1917, the Army Medical Department was better prepared than it had been for any previous war. Even before the declaration of war, the Medical Department received \$7 million, 14 percent of the funds President

<sup>3</sup> Estimate from Rickard, 2007.

<sup>4</sup> The first major independent American offensive action of the war took place at the Saint-Mihiel on September 12–13, 1918. The largely American army that attacked the Saint-Mihiel salient numbered about 55,000 men. It was assumed that the German resistance would be as stiff as it had been in the June and July fighting. However, “the Americans caught the Germans as they were retreating towards the Hindenburg Line. In 36 hours the Americans took over 13,000 prisoners and captured 466 guns. The Germans lost 5,000 killed and wounded, while the Americans suffered 7,000 casualties” (Richard, 2007). The

enemy, far outnumbered made little resistance ... and inflicted less than seven thousand casualties, mostly light. ... Immediately a large part of the [American] army was shifted to the Meuse-Argonne. ... By the time the Americans had penetrated to Sedan ... Germany could no longer shift her divisions and ... no longer maintain an offensive war. (Ashburn, 1929, p. 338)

<sup>5</sup> Raudzens, 1990, p. 421, cites Hogg’s estimate that 60 percent of British casualties came from artillery. The American experience was very different: Gunshot wounds accounted for almost twice as many hospital admissions as wounds from artillery and more than twice as many deaths. The death rate from gunshot wounds was 20 percent higher than from artillery wounds. See Love, 1925, pp. 1019–1021.

Wilson had authorized to facilitate military preparedness. After the declaration of war, the Army quickly established three centers for training medical officers and later added a fourth for “negro medical officers” (Ashburn, 1929, p. 301). From a base of 833 medical officers on active duty and 1,267 in the National Guard, the Medical Corps grew to 30,591 in service at the time of the armistice.<sup>6</sup>

The wounded of World War I benefitted greatly from several developments that profoundly influenced the numbers and treatment of wounded soldiers and veterans. As high as the casualties were in this war, the number of deaths would have been even higher had it not been for the medical advances achieved over the previous 50 years, especially the abilities to control infections and prevent communicable diseases. These reduced mortality rates and changed the number of surviving veterans, the nature of their wounds, and their resulting disabilities. Moreover, the care that disabled veterans received was markedly different from what veterans of previous wars had received.

At the beginning of the war, and following the Civil War model, “everyone thought of the disabled man in terms of amputations and blindness” (Davis, 1921, pp. 29–30), and care for the disabled meant a pension and, possibly, a place in a soldiers’ home. Building on the experience of the allies in Europe during the first three years of the war and supported by our own vocational education movement, the nation developed what the director of the new vocational rehabilitation program called a “widely expressed conviction that it would be a sound investment of Government funds to train and educate as many ex-service men as possible” (Davis, 1921, p. 30). This was in keeping with other Progressive-Era reforms and signified a new commitment not only to heal the wounded but also to return them to a productive life.<sup>7</sup> This new commitment was not only reflected in the new institutions that were created to care for the needs of veterans but also in the very organization of the Army Medical Department. In fact, the Secretary of War had to curb the Army Surgeon General’s enthusiasm when he submitted plans for the “physical reconstruction and vocational training [of] . . . invallided men,” reminding him that “similar plans were being considered by several other departments” and instructing him to “present a plan which would introduce unity and coordination in the whole scheme” (Crane, 1927, pp. 9, 36).

<sup>6</sup> When war was declared, the Army also had 403 nurses on active duty and a Red Cross reserve of 8,014. Eventually, 21,480 nurses would serve. The enlisted ranks also grew from 6,619 to 281,341, reaching maximum strength on November 15, 1918 (Ireland, 1923).

<sup>7</sup> Liachowitz, 1988, p. 20, terms this a change in the social construct, arguing that, by comparing the treatment of World War I veterans and those of our colonial period, “one can see . . . the meaning of disability change from an attitude of requiring public maintenance to a modifiable obstacle to gainful employment.” Further, the

Progressive Era in the United States was a period of reform that lasted from the 1890s to the 1920s. The Progressives sought change in regard to workers’ rights and protection of the ordinary citizen in general. Initially the movement was successful at local level, and then it progressed to the state and gradually to the national. Characteristics of progressivism included a favorable attitude toward urban-industrial society, belief in mankind’s ability to improve the environment and conditions of life, belief in obligation to intervene in economic and social affairs, and a belief in the ability of experts and in efficiency of government intervention.

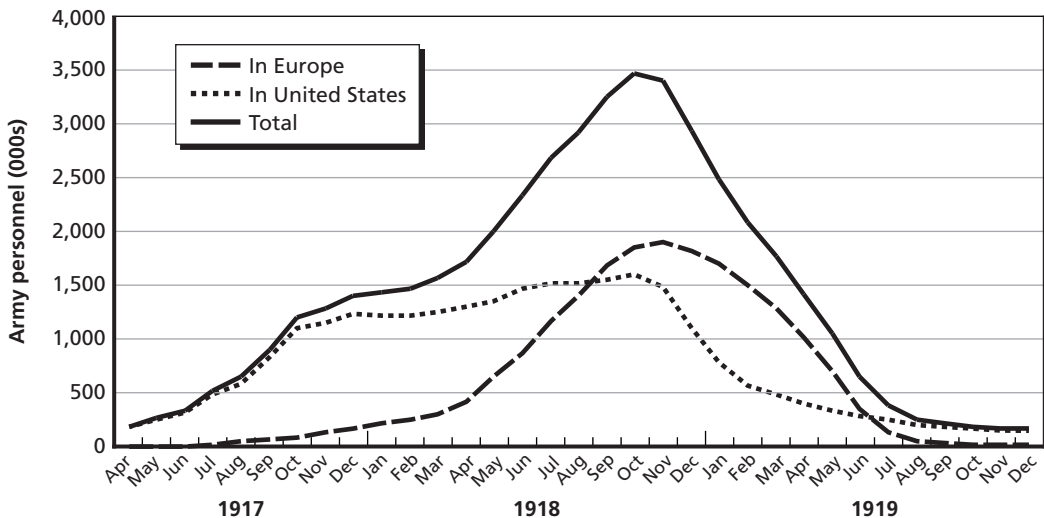
## World War I Mobilization, Deployments, and Battle Casualties

For the United States, World War I was over before it really got started (see Figure 7.1). The rapid mobilization was followed by an equally rapid demobilization. Moreover, the time American troops were engaged in combat was measured in months, a shadow of the years the European troops had spent on the line.

### Mobilization

Between April 1917 and Armistice Day, November 11, 1918, the size of the Army increased from 190,000 to 3,665,000. The first troops arrived in Europe during July 1917; by the time hostilities ceased, 1,908,000 troops were overseas. This was 54.5 percent of the total Army.<sup>8</sup> While the Army increased in size by a factor of 19, the medical services increased even more, by a factor of 42.<sup>9</sup> In March 1917, the Army had approximately 7,000 medical personnel (Bispham, 1927);<sup>10</sup> by the time of the Armistice in November 1918, it had more than 300,000 personnel (Baker, 1919, p. 13). This included almost 31,000 physicians (about 27 percent of all physicians in America were

**Figure 7.1**  
**The American Buildup: The Army from April 1917 to December 1919**



SOURCE: Love, 1925, p. 17.

RAND MG1164-7.1

<sup>8</sup> For the month-to-month growth, see Baker, 1919, p. 11.

<sup>9</sup> For a comparison of the growth of the various Army branches, see Baker, 1919, p. 13.

<sup>10</sup> Bispham, 1927, further reports that, when the United States entered the war, the Medical Department had a staff of 491 regular medical officers, 342 temporary, 86 Dental Corps, and 62 veterinary officers and 6,619 enlisted men.

in uniform) and over 21,000 nurses, with more than 10,000 serving overseas (U.S. Army Medical Department, 2011, p. 10).

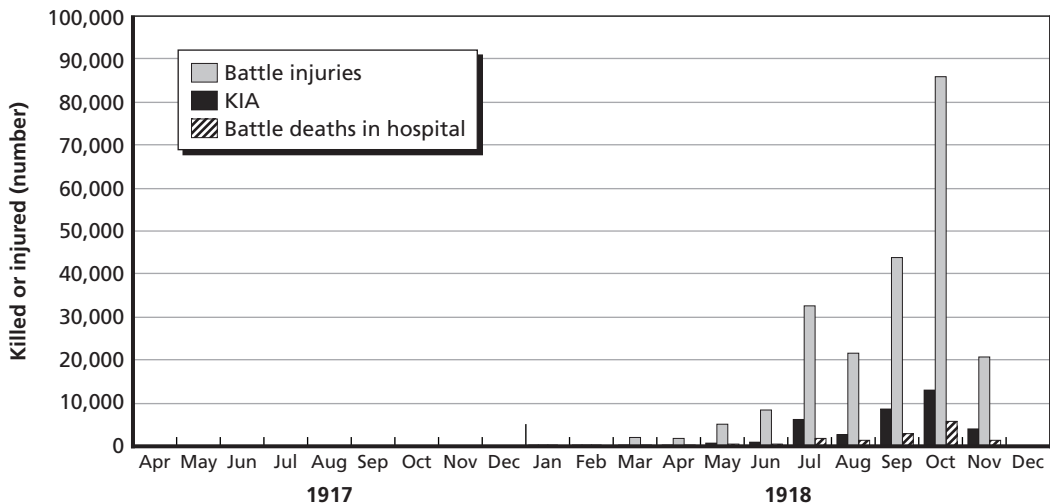
### American Casualties

By the time the United States entered the war on Germany on April 6, 1917, the allies had been at war for almost three years. While the United States began its buildup immediately, troops did not start to arrive in Europe in large numbers until the following April. The buildup continued until November 11, 1918, the day the armistice was signed, and the American forces then left Europe almost as quickly as they had arrived. American units were actively engaged in combat for an even shorter period.

Figure 7.2 shows American casualties, KIA, and battle injuries by month from the declaration of war to the signing of the armistice. Most American casualties occurred during the final “Hundred-Day Offensive,” which started on August 8, 1918.

By the time Germany signed the armistice, the Central Powers had suffered over 4 million military casualties, the Entente Powers nearly 5.5 million. In comparison, American casualties were low. In its ten months in action, the AEF suffered 36,694 KIA and 224,092 battle injuries, of which 13,691 later died in military hospitals (Love, 1925, p. 1028).<sup>11</sup> In addition, 646 officers and 24,541 enlisted men were discharged for battle-related disabilities (Love, 1925, p. 1022). Table 7.1 shows that most battle

**Figure 7.2**  
**American Battle Casualties—Killed in Action and Battle Injuries, by Month**



SOURCE: Love, 1925, Tables 116–118, pp. 1025–1027.

RAND MG1164-7.2

<sup>11</sup> The numbers are slightly different from those published in Leland and Oboroceanu, 2009. Nonbattle deaths accounted for another 56,176 soldiers (Love, 1925, p. 676).

**Table 7.1**  
**Battle Injuries, Admissions by Military Agents, 1917–1918**

Type	Admissions				Deaths				Portion of Admissions (%)
	Officers	Enlisted	Total	Distrib. (%)	Officers	Enlisted	Total	Distrib. (%)	
Gas	2,303	67,949	70,252	31.35	28	1,193	1,221	8.92	1.74
Gunshot	3,586	91,959	95,545	42.64	413	8,035	8,448	61.70	8.84
Artillery	1,683	48,543	50,226	22.41	146	3,542	3,688	26.94	7.34
Hand grenade	31	849	880	0.39	2	54	56	0.41	6.36
Other	595	6,591	7,186	3.21	28	250	278	2.03	6.32
Total	8,198	215,891	224,089	100.00	617	13,074	13,691	100.00	6.11
Ratio <sup>a</sup>	174.97	215.96	214.12		13.17	13.08	13.08		

SOURCE: Love, 1925, Tables 109 and 110, pp. 1019–1021.

NOTE: The mean annual strength of the AEF for 1918 was 46,854 officers and 999,679 enlisted men.

<sup>a</sup> Per 1,000.

injuries resulted from gunshots, then gas, and finally artillery.<sup>12</sup> The prevalence of gunshot wounds over artillery is very different from the experience of the other allies, who fought years of trench warfare, and probably reflects the mobility of American troops during the final campaign of the war.

## Caring for the American Soldier

The American soldiers of World War I received better medical care than those in any previous wars. Historically, nonbattle deaths were far greater than combat casualties or deaths at the hands of the enemy. If it were not for the great influenza epidemic of 1918, World War I would stand out as the first great conflict in which noncombat deaths lagged substantially behind battlefield deaths and casualties.<sup>13</sup> On the battlefield, those wounded in action received medical care that incorporated new advances in medicine and new battlefield techniques for limiting infections and were treated in well-staffed general and specialized hospitals.

### Advances in Medicine

Typhoid fever had always been the scourge of the Army. By World War I, the U.S. Army's vaccination program had largely eliminated the disease. During World War I, the Army reported no deaths from typhoid vaccinations and only 222 deaths from typhoid fever (Love, 1925). The smaller Union Army during the Civil War had more than 79,000 cases, with almost 30,000 deaths. During the Spanish-American War, the Army of 107,000 soldiers had 21,000 cases and almost 1,600 deaths (Keen, 1918, p. 19). Table 7.2 shows the admissions, admission-rate deaths, and death rates for some of the most common diseases for both World War I and the Civil War. The admission rates and death rates are remarkably lower for World War I. In fact, as shown in Table 7.3, the admission rate for typhoid fever was 84 times greater in the Civil War than it was in World War I, and the death rate for the cases admitted to a hospital was more than twice as great. Even the mortality rate from gunshot wounds was 38 percent greater in the Civil War than in World War I. Unfortunately, the Army's immunization programs could not control influenza or its respiratory complications, especially pneumonia. The rapid spread of the influenza epidemic in fall 1918 was noted in the report of the Secretary of War:

<sup>12</sup> This reflects the official statistics published in Love, 1925. Love, 1932, presents a different account. The 1925 report suggests that the ratio of gunshot to artillery wounds is almost 2 to 1. In the 1932 article, the ratio is reversed. It appears that, in the 1932 report, Love omitted the substantial numbers of "gunshot missile, kind-type not specified."

<sup>13</sup> For a more complete discussion of the pandemic and the U.S. Army, see Surgeon General of the Army, 1919. The full impact of the pandemic on the war will never be known, but at the time of the Armistice, large parts of the German army had taken ill. Erich von Ludendorff, the German Army chief of staff, claimed that the flu caused the failure of his spring offensive, hastening the end of World War I (as cited in Gewen, 2004).



**Table 7.2**  
**Admission and Death Rates, Civil War and World War I**

Diagnosis	World War I <sup>a</sup>				Civil War <sup>b</sup>			
	Admissions		Deaths		Admissions		Deaths	
	Number	Rate per 10,000 per Month	Total	Rate <sup>c</sup> (%)	Number	Rate per 10,000 per Month	Number	Rate <sup>c</sup> (%)
Typhoid fever	1,386	0.11	215	15.51	75,368	24.39	27,656	36.69
Malarial fever	11,072	0.91	25	0.23	49,871	16.14	4,059	8.14
Smallpox	794	0.06	5	0.63	12,235	0.77	4,717	38.55
Dysentery	3,918	0.32	63	1.61	259,482	83.96	7,313	2.82
Measles	93,629	7.66	2,343	2.50	67,763	21.93	4,246	6.27
Scarlet fever	11,189	0.92	338	3.02	578	0.19	70	12.11
Diphtheria	10,427	0.85	165	1.58	7,277	2.35	716	9.84
Influenza	734,397	60.10	23,359	3.18	—	0.00	—	
Mumps	221,060	18.09	—	0.00	48,128	15.58	72	0.15
Tuberculosis	36,169	2.96	2,633	7.28	19,890	6.44	5,412	27.24
Venereal disease	338,746	27.72	158	0.05	169,215	54.75	129	0.08
Bronchitis	234,822	19.22	409	0.17	195,627	63.30	1,179	0.60
Pneumonia	70,030	5.73	18,040	25.76	61,202	19.8	14,738	24.08
Gunshot wounds <sup>d</sup>	95,545	7.82	8,448	8.84	52,262	16.91	6,369	12.19

SOURCES: Love, 1925, Table 81, pp. 576–579; Woodward, 1870, Table C, pp. 636–641.

<sup>a</sup> Mean annual strength 3,703,191.

<sup>b</sup> Mean annual strength of white troops 468,275.

<sup>c</sup> Calculated on admissions.

<sup>d</sup> Mean strength of AEF 1,046,533.

**Table 7.3**  
**Relative Admission and Death Rates for Common Diseases, World War I and the Civil War**

Diagnosis	Admission Rate per 10,000 per year (%)		Ratio Civil War to World War I	Death Rate per Admission per year (%)		Ratio Civil War to World War I
	World War I	Civil War		World War I	Civil War	
Typhoid fever	0.11	24.39	215.02	15.51	36.69	2.37
Malarial fever	0.91	16.14	17.81	0.23	8.14	36.05
Smallpox	0.06	0.77	60.93	0.63	38.55	61.22
Dysentery	0.32	83.96	261.87	1.61	7.83	1.75
Measles	7.66	21.93	2.86	2.50	6.27	2.50
Scarlet fever	0.92	0.19	0.20	3.02	12.11	4.01
Diphtheria	0.85	2.35	2.76	1.58	9.84	6.22
Influenza	60.10	0.00		3.18		
Mumps	18.09	15.58	0.86	0.00	0.15	
Tuberculosis	2.96	6.44	2.17	7.28	27.24	3.74
Venereal disease	27.72	54.75	1.98	0.05	0.08	1.63
Bronchitis	19.22	63.30	3.29	0.17	0.62	3.46
Pneumonia	5.73	19.8	3.46	25.76	24.05	0.93
Gunshot wounds	7.82	16.91	2.16	8.84	12.19	1.38

SOURCES: Love, 1925, Table 81, pp. 576–579; Woodward, 1870, Table C, pp. 636–641.

In the eight weeks from September 14 to November 8 [1918] there were reported among all troops in the United States over 316,000 cases of influenza and over 53,000 cases of pneumonia. Of the 20,500 deaths during the period, probably 19,800 were the results of the epidemic. During eight weeks the epidemic caused more than twice as many deaths among troops in the United States as occurred during the entire year preceding the epidemic, and almost as many as the battle fatalities during the entire 18 months of the war up to October, 1918. . . . The American Expeditionary Force suffered somewhat from the epidemic, but far less severely than the troops in the United States. (Baker, 1919, p. 20)

The flu and respiratory disease accounted for 80 percent of the 55,868 disease deaths during the war (Greenwood and Berry, 2005, p. 76). Despite the great advances in medicine in the 52 years between World War I and the end of the Civil War, disease once again claimed more American lives than the enemy.

### **Hospitals of the American Expeditionary Forces**

The prewar plan envisioned the rapid deployment of Red Cross reserve hospital units that had been established at civilian hospitals in the United States.<sup>14</sup> However, of the 20 hospitals organized before the war, only ten were deployed to France during 1917 (Jaffin, 1990, p. 69). By mid-July 1918, instead of the 54 evacuation hospitals originally planned to support the 26 deployed divisions in France, only eight were operational. Instead of the four field hospitals authorized for each division, only two were available for each (Jaffin, 1990, p. 2). The problem was the lack of available transports. Priority went to the movement of combat troops to Europe and “frequently transportation was not available for medical units when they were reported ready for shipment (Lynch, Weed, and McAfee, 1923, pp. 347–348). A total of “162 base hospitals and 50 evacuation hospitals were organized in this country. Of these, 121 base hospitals and 40 evacuation hospitals were actually transported for duty overseas” (Lynch, Weed, and McAfee, 1923, p. 354).<sup>15</sup> During the Meuse-Argonne Offensive, a month before the Armistice, patients outnumbered normal hospital beds by approximately 20,000.<sup>16</sup>

<sup>14</sup> The Red Cross’s heavy involvement in World War I was not repeated in World War II. Dulles, 1950, p. 173, in her history of the Red Cross, notes:

In addition to helping provide for the general welfare of the troops, Red Cross hospitals cared for thousands of sick and wounded—approximately one-third of all battle casualties of the A.E.F.—and Red Cross nurses saw active service in emergency stations just behind the front lines. . . . In a way that circumstances would not permit a quarter of a century later [during World War II], the American Red Cross in 1918 directly fulfilled its basic charter obligation “to furnish volunteer aid to the sick and wounded of the armies in time of war.”

<sup>15</sup> Gillett, 2009, p. 29, notes that the “first base hospital to go overseas, Base Hospital No. 4, was formed by the Lakeside Hospital from Cleveland, Ohio. At its head was Dr. George W. Crile, a major in the Medical Reserve Corps, the originator of the base hospital concept, and a professor of surgery at Western Reserve University.”

<sup>16</sup> When hostilities ceased, according to Jaffin, 1990, p. 175, there were 276,347 hospital beds in France. These beds were spread among 153 base hospitals, 66 camp hospitals, 39 evacuation hospitals, and 12 convalescent camps.

### Organization of Medical Support and Evacuation of the Wounded

The Field Service Regulations of 1914 established the doctrine and medical organization in the zone of advance as shown in Figure 7.3.<sup>17</sup> The centerpiece of medical support for the troops in Europe was the division hospital. As designed, the standard American division consisted of two infantry brigades, each with two regiments, and numerous supporting units, with a total of more than 28,000 men (Lynch, Ford, and Weed, 1925), including 1,560 medical personnel. While medical personnel at the company, battalion, and regimental levels tended to the sick and treated minor wounds, the battalion aid station under the battalion surgeon was the focal point of lifesaving surgical care close to the front lines. In addition, two evacuation hospitals and a sanitary train of four field hospitals and four ambulance companies provided evacuation from the battlefield. The average time it took to evacuate men was now measured in hours. The time between wounding and arrival at a field hospital averaged five hours; to an evacuation hospital, ten hours (Ashburn, 1929, p. 347).

Medical support at the front during World War I saw two innovations in the transportation of the sick and wounded. First was the advent of the motorized ambulance, and the second was the widespread use of hospital trains. Ambulance companies to support field and mobile surgical hospitals did not exist in the peacetime Army, and none were available when the Army began to arrive in France. By the Armistice, fewer than one-third of the necessary companies were operational, forcing the Americans to borrow ambulances from the French and Italians and to press some 30 sightseeing buses into service (Jaffin, 1990, p. 88).

### Advances in the Care of the Wounded: Amputations

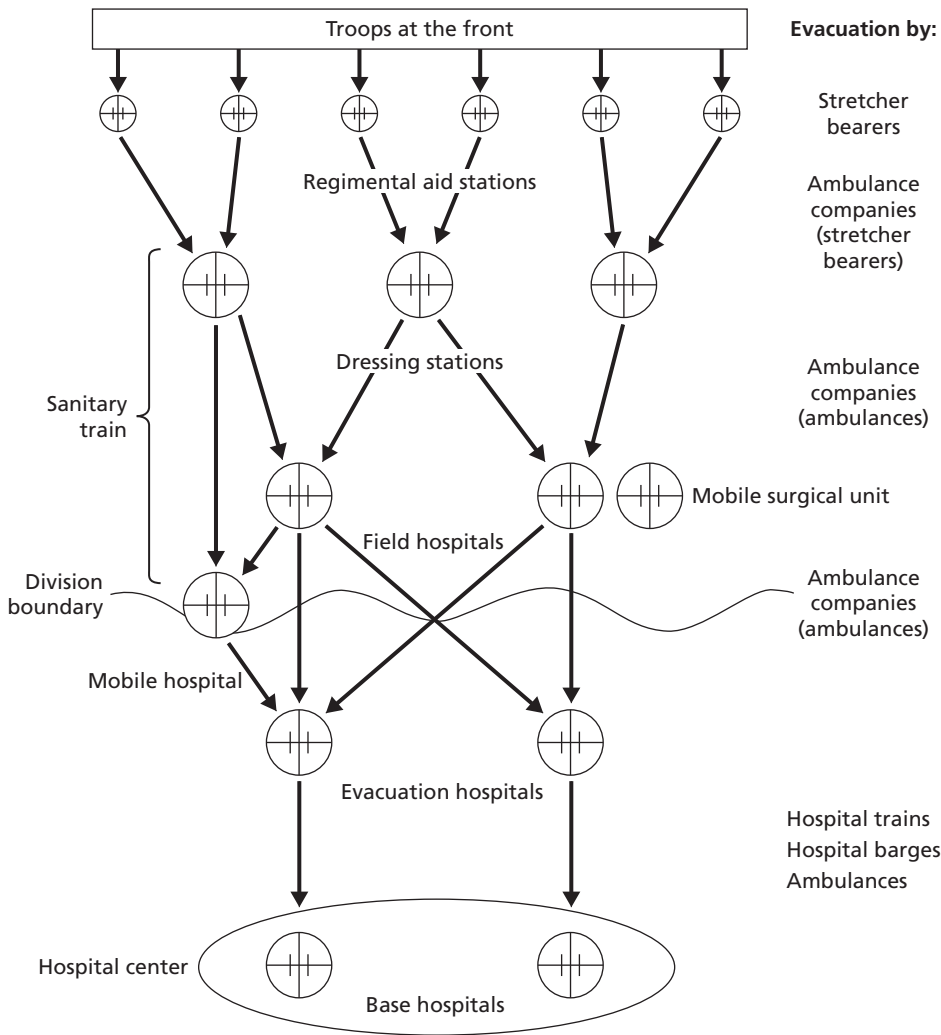
Advances in medicine toward the end of the 19th century affected the number and nature of the wounds of surviving soldiers profoundly. While the discovery of anesthesia in 1846 had benefited the wounded of Civil War battles, anesthesia had no effect on mortality rates following surgery. It took until 1867, two years after the end of the Civil War, for Joseph Lister to publish “On the Antiseptic Principle of the Practice of Surgery” and more than a decade before the germ theory of disease started to affect Army medicine.<sup>18</sup> World War I was fought over soil that had been rich farmlands infested with bacteria,<sup>19</sup> and many wounds from exploding artillery rounds caused what one observer called an “unprecedented riot of infection” (Keen, 1918, p. 16), but

<sup>17</sup> See U.S. War Department, 1917, pp. 151–158.

<sup>18</sup> Lister first presented his paper at the annual meeting of the British Medical Association in Dublin on August 9, 1867; it appeared in the *British Medical Journal* shortly thereafter.

<sup>19</sup> During the early years of the war, the available antiseptics could not control a bacteria commonly called *gas bacillus* or *gas gangrene*. It was first discovered in 1892 in farm fields that had been cultivated with animal fertilizers. Shay notes, “Wounds simply would not heal. Instead, they swelled with pus and purification. . . . Amputations were common . . . [and] at some hospitals the rate of survival was only 20 percent. If the diseased wound was on the torso, death was virtually certain” (Shay, 2002b, pp. 202–203). Eventually, these wounds were con-

**Figure 7.3**  
**The American Expeditionary Force: Evacuation System from the Front to the Base Hospitals**



SOURCE: Jaffin, 1990, p. 81.

RAND MG1164-7.3

by the time America entered the war, military physicians had learned how to cope with battle infections.

Allied military surgeons had already learned that the first several hours after injury were critical to preventing contamination of a wound. They learned that, if they cut away all foreign objects and applied antiseptic properly, mortality rates would

trolled with the use of hypochlorous acid. Experience also showed that early treatment of wounds was critical, and American medical officers pushed to ensure field hospitals were as near the front lines as possible.

plummet. As a result, World War I stands in sharp contrast to the experience of the Civil War:

Only 25 percent of the cases of compound fractures are now—during World War I—fatal instead of 66 per cent as in the [Civil War]. Four out of five amputations are due to infection. Our victory over infection is the reason for the greatly diminished number of amputations in the present war. Moreover, the mortality of amputations in our armies is low; in some series every one has recovered. Of the wounded, 80 percent are soon able to return to the fight. (Keen, 1918, p. 15)

Table 7.4 shows the distribution of amputations comparing the experiences of World War I and the Civil War. During the Civil War, 11 percent of all “gunshot” wounds resulted in amputations. During World War I, less than 3 percent of “gunshot, shell, shrapnel and hand grenade” wounds resulted in amputations.<sup>20</sup>

In the years before World War I, American surgeons paid little attention to the “general principles of prosthesis.” Moreover, as Brackett, 1927, p. 713, noted, the surgical methods of the battlefield that had been “found so necessary and advantageous in counteracting the dangers of infection required an entirely different character of after-treatment from the customary amputation of civil life.” As a result, while the troops of the AEF were training in Europe, the Medical Department formed a “special amputation service” and started to train its own surgeons in what it called “this special type of work” (Brackett, 1927, p. 687).<sup>21</sup> The training took place at the bureau of artificial limbs of the American Red Cross in Paris and at facilities at amputation centers in England, Belgium, France, and Italy.<sup>22</sup> Special amputee services were established at base hospitals in Chateauroux and Savenay in France.

<sup>20</sup> As calculated from Otis and Huntington, 1883, p. 877; Brackett, 1927, p. 718–719; Love, 1925, Tables 81, 109, and 110; and Woodward, 1870, Table C. This may overstate the World War I amputation rate because the number of amputations used here, from Brackett, 1927, p. 719, is “Amputation Cases Returned to the United States” (4,403). This is substantially larger than what Weed (1923, Table 10) reports as “Patients from American Expeditionary Forces transferred to General and Base Hospitals from Ports at Hoboken and Newport News” of 2,801. Almost all patients returned to the United States debarked at either Hoboken or Newport News.

<sup>21</sup> Eventually, when the amputation center at Walter Reed General Hospital developed, medical officers were sent there for instruction in the care of the stump, the principles of stump surgery, the technique for constructing temporary peg legs, and the general principles of artificial limbs. In 1918, however, deployed surgeons had to learn on the job after they arrived in France (Brackett, 1927, p. 714).

<sup>22</sup> Brackett, 1927, p. 687, found the experience early in World War I (1915) in England and France with amputees to be “lamentable” and noted:

The vast majority presented fat, congested stumps, with powerless muscles and serious joint contractures. Many had lost important segments of their limbs, due to the mistaken notion that a longer stump would be an encumbrance; and many others had to undergo reamputation and to lose valuable segments which might otherwise have been saved had suitable treatment been applied. A large number had to go back to the hospitals for long periods of treatment before artificial limbs could be fitted. All made very slow progress and some never succeeded in learning to walk.

The surgeons of the AEF learned from the experience of the allies and established special amputee services.



**Table 7.4**  
**Amputations, World War I and Civil War**

Body Part	Civil War		World War I	
	Number	Percent	Number	Percent
Upper extremities				
Hand or fingers	7,290	24.32	1,481	33.64
Wrist	68	0.23	26	0.59
Forearm	1,761	5.87	212	4.81
Elbow	40	0.13	41	0.93
Upper arm	5,510	18.38	550	12.49
Shoulder	866	2.89	—	0.00
Multiple	47	0.16	36	0.82
Lower extremities				
Foot or toes	1,519	5.07	303	6.88
Ankle	161	0.54	131	2.98
Leg	5,523	18.42	—	0.00
Knee	195	0.65	422	9.58
Thigh	6,369	21.24	1,137	25.82
Hip	66	0.22	—	0.00
Multiple	—	0.00	39	0.89
Subtotal (upper and lower)	565	1.88	25	0.57
Total	30,605	100.00	4,403	100.00

SOURCES: Otis and Huntington, 1883, p. 877; Brackett, 1927, p. 718–719.

The amputation centers in France were unique because they provided not only the usual surgical services but also prosthetic services and the advanced physiotherapy that would be the hallmark of the Army's Walter Reed Medical Center almost a century later. The centers incorporated lessons they had learned from the Belgian Medical Corps, which demonstrated the beneficial effects of early weight bearing in the treatment of lower-limb amputations. Through the good offices of the American Red Cross in Paris, simple prosthetic devices were designed and procured, which made it possible to get patients out of bed and walking without other support very shortly after amputation. The amputees were fitted with "provisional legs" with plaster of Paris sockets. With these temporary artificial legs, the men were put through stump drills to strengthen weak muscles and teach balance. Reconstruction aides administered massage and exercise to the bed cases. This was beneficial because it promoted healing, hastened stump shrinkage, prevented muscle atrophy, improved the patient's morale, and decreased the time before the permanent artificial limb could be fitted (Brackett, 1927, p. 689).

In one way, the Army was well equipped to handle what it expected to be an onslaught of amputations.<sup>23</sup> The United States was the world leader in the production of artificial limbs because of the government's program to provide them to Civil War veterans. In addition, a byproduct of the industrialization after the Civil War was a steady stream of industrial accidents and amputations. One supplier, the Winkley Artificial Limb Company, even had a standing contract with a railroad company to provide "adjustable slip socket legs," noting that "a man can do double the amount of work upon a perfectly fitting leg" (Reznick, 2008, p. 189). When the United States entered World War I, the artificial limb industry had already been supporting increased demands from the allies for artificial limbs, and the Army estimated that "the industry as a whole, with its existing equipment, could [still] produce a thousand limbs per month in addition to the number required for civilian needs" (Brackett, 1927, p. 716). Fortunately, that number was never needed.

### **Advances in the Care of the Wounded: The Neuropsychiatrically Impaired**

In 1944, the American Psychiatric Association published a comprehensive history, *One Hundred Years of American Psychiatry*. It summarized the experience of World War I as follows:

The plan of attack on the neuropsychiatric problems of World War I was well conceived, reasonably comprehensive, and ably executed. This was all the more noteworthy since in this country military neuropsychiatry was without benefit of experience. (Strecker, 1944, p. 385)

Accepting this judgment, there appear to be several explanations. First, the field of neuropsychiatry had matured and grown since the last great national conflict, the Civil War, making the medical profession much more aware of neuropsychiatric problems in general.<sup>24</sup> Second, the Army tried to learn as much as it could from the allies' experience with neuropsychiatric cases before the United States entered the war. Third, these kinds of casualties had become legitimized; the sense had developed that modern warfare had created this new class of casualties, and given the large numbers of cases, they could not be ignored. Nevertheless, there was no common vocabulary that would enable psychiatry to classify behaviors in a readily understood manner, then provide a diagnosis and a preferred course of treatment for what they would see on the battlefield of Europe.<sup>25</sup> The misuse of the term *shell shock* and the coexistence of psychiatric

<sup>23</sup> According to Brackett, 1927, p. 713, the Army expected to need 300,000 artificial limbs.

<sup>24</sup> This book follows the Army's common use of the term *neuropsychiatric*, although there is an important distinction between neurology and psychiatry. The former is concerned with organic diseases and disorders of the nervous system, while the latter is concerned with functional disorders. See Menninger, 1948, p. 3.

<sup>25</sup> Glass, 1966, p. 4, suggests that a "lack of psychiatric sophistication" might be responsible for the fact that "war neuroses were not recognized in earlier years." He noted, "It is evident that before World War I the incidence of

treatment and the firing squad for cowardice give testimony to the inexperience of the medical profession during World War I.

### ***Preparing for War***

The “plan of attack on the neuropsychiatric problems of World War I” was the work of one man, Dr. Thomas Salmon. In 1916, the Army sent Salmon to England to observe and “contribute information which might aid in formulating plans for dealing with mental and nervous diseases among our . . . forces when they are exposed to the terrific stress of modern war” (Salmon, 1917, p. 7).

Salmon held a commission as a major in the Medical Officers’ Reserve Corps; in civilian life, he was medical director of the National Committee for Mental Hygiene.<sup>26</sup> In England, he found that the strain of the war had redefined the whole issue of neuropsychiatric casualties, particularly the nature and treatment of what was then commonly called *shell shock* and that later would be termed *war neuroses* or *psychoneuroses*. While these terms cover a variety of specific conditions,<sup>27</sup> they stand in sharp contrast with conditions that are grouped under the term *psychosis* (Menninger, 1948, p. 124). The latter group encompasses such symptoms as delusions and hallucinations, and sufferers are often described as *insane*. *Neuroses* are often characterized by personality disorders, such as depression and other dysfunctional behaviors, which were heightened by the stresses of being in the military and combat. In what some view today as a controversial statement, Salmon argued that

[a]lthough an excessive incidence of mental diseases has been noted in all recent wars, it is only in the present one that functional nervous diseases have constituted a major medico-military problem. . . . It is apparent that new conditions of warfare are chiefly responsible for their prevalence. (Salmon, 1917, p. 27)<sup>28</sup>

Moreover, the prevalence of such diseases meant that they had to be addressed. Salmon, 1917, p. 7, reported that they constituted “one-seventh of all discharges for disability from the British Army, or one-third if discharges for wounds are excluded.”

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psychoses mainly was recorded. The concept of neurosis was little appreciated during these years, and thus the diagnosis of psychoneurotic disorders, except for neurasthenia and hysteria, was seldom made.”

<sup>26</sup> From 1923 to 1924, he served as the president of the American Psychiatric Association.

<sup>27</sup> It was not until the latter part of World War II (after February 1945) that Army medical records abandoned these general terms in favor of more definitive diagnosis. See Menninger, 1948, p. 297.

<sup>28</sup> Marlowe, 2001, p. 32, takes a contrary view about the uniqueness of the “conditions of warfare” in World War I. He suggests a “significant number of shell shock victims could be described in the same terms as those used for stragglers in the American Civil War.” Dean, 1997, reconsiders the Civil War and finds numerous cases of what we would today call PTSD. Shay, 1994, traces it even to ancient times.

### **Shell Shock**

In 1917, the symptoms of shell shock were not new. As early as 1892, Sir William Osler described the symptoms that would come to be described by this term (Osler, 1892). But the circumstances were not universally understood at the beginning of World War I. In the first year of the war, 1914, a soldier displaying neuropsychiatric symptoms but showing no physical signs could be accused of cowardice.<sup>29</sup> Men whom we would today classify as combat-stress casualties were then seen as meriting a sentence of death, to be carried out by a firing squad, as a warning to other malingerers.<sup>30</sup>

When it became clear that immediate proximity to an exploding shell was not necessarily the only reason for soldiers to display neuropsychiatric symptoms, first French and then British physicians came to believe that “shell shock was essentially a psychological or emotional response to the strains of terrifying and overwhelming battle experiences” (Marlowe, 2001, p. 33).<sup>31</sup>

### **Salmon's Report**

Salmon fundamentally accepted the neuropsychiatric view that had taken hold by the time of his visit and drew some important lessons concerning the organizational and treatment modalities of the British. These were all the more remarkable given how sharply they differ from the prevailing views of the medical profession of only a few years earlier. Salmon reported to the Army Surgeon General that there was an “urgent” need to

- Carefully screen recruits so that the Army did not accept “large numbers of recruits, who had been in institutions for the insane or were of demonstrably psychopathic make-up” (Salmon, 1917, p. 23).
- Plan comprehensively for establishing special military hospitals and using existing civil facilities for treating mental disease in a manner that would serve the Army effectively and at the same time safeguard the interests of the soldiers, of the

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<sup>29</sup> Binneveld, 1997, p. 84, explains: “Within this [military] culture where courage and unflinching resolve are primary virtues there is scarcely any room for soldiers who can no longer cope and who break down. These servicemen are simply seen as cowards and weaklings. What they deserve is not help but punishment.” A biblical verse from Deuteronomy (20:5) suggests a kinder and more-pragmatic outcome, as it is written, “Whoever is afraid and faint-hearted must leave and return home, so that his fellows may not become faint-hearted like him.”

<sup>30</sup> In 1914, the British executed one soldier for “cowardice.” The following year, the number was four, and in 1916, the number rose to ten. The number dropped to two in 1917, and no one was executed for cowardice in 1918. During the war, 17 of the 304 British soldiers executed were for cowardice (Simkin, undated b).

<sup>31</sup> Dr. Charles Myers coined the term “shell shock” in an article in the British journal *Lancet*. He originally thought that concussive effect of an exploding shell could cause “an invisible fine molecular commotion in the brain” (Holden, 1998, p. 17). Myers later rejected his own theory when it became clear that soldiers who had never been near exploding shells had symptoms. Nevertheless, sharp divide remained between those who believed that war neurosis was a physical condition and those who believed that the primary cause was emotional.

government, and of the community (Salmon, 1917, p. 23), which should include the following:

- special base hospitals (special convalescent camps) for cases likely to recover and return to active duty within six months
- special neuropsychiatric wards for observation and emergency treatment of mental and nervous cases
- further advanced evacuation hospitals with psychiatrists and neurologists (Salmon, 1917, p. 48)
- clearing hospitals and wards to receive, provide emergency treatment for, classify, and determine disposition of “mental cases among enlisted (and officers) invalided home” (Salmon, 1917, p. 49)
- special convalescent camps for the “treatment and re-education of such cases of war neuroses as are invalided home” (Salmon, 1917, p. 49)
- special boards to assist the surgeon general with contracting with public and private hospitals “to care for officers and enlisted men suffering from mental disease until recommended for retirement or discharge by a Special Board” (Salmon, 1917, p. 49).

Salmon, 1917, p. 44, also highlights the importance of distinguishing between neuroses and malingering and of ensuring that “no case in which the possibility of neurosis or psychosis exists . . . be finally dealt with until the subject is examined by a neurologist or psychiatrist.”

### ***Preinduction Screening***

The first of Salmon’s recommendations was directed at what he called “careless recruiting,” improper screening of recruits at induction centers.<sup>32</sup> The recommendation notwithstanding, the regular line and medical officers of the Army were not inclined to reject anyone at the beginning of the war because they had a predisposition to nervousness or some mental disease:

Many line officers . . . maintained that if the [psychiatric] specialists did not stop eliminating the unfit, there would be no army left.<sup>33</sup> Many medical officers, [did] not distinguish between physical and mental disorders [and]. . . embraced the belief that the training which transformed poor physical specimens into robust fighting men . . . [would] have the same effects upon recruits with nervous or mental disabilities. (Bailey, Williams, and Komora, 1929, p. 58)

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<sup>32</sup> Salmon complained that the “problem of dealing with mental diseases in the army—difficult at best—has been made still more so by accepting large numbers of recruits, who had been in institutions for the insane or were of demonstrably psychopathic make-up” (Salmon, 1917, p. 23).

<sup>33</sup> The first 31 divisions sailed to Europe with 3,035 soldiers who had been recommended for discharge as “unfit for military service by the psychiatric examiners” (Bailey, Williams, and Komora, 1929, pp. 58–59).

The situation changed after July 15, 1918, when General John Pershing, the Commander of the AEF, cabled the Chief of Staff of the Army:

The prevalence of mental disorders in replacement troops recently received suggests urgent importance of intensive efforts in eliminating mentally unfit from organizations . . . prior to departure from the United States. Psychiatric forces and accommodations here inadequate to handle a greater proportion of mental cases than heretofore arriving, and if less time is taken to organize and train new division, elimination work should be speeded.<sup>34</sup>

By the end of the war, the Army was accepting only those it judged to be free from neuropsychiatric disorders, but such a judgment was difficult to make. There was no national database to estimate the numbers that might be rejected:

Many of the mentally and nervously unfit are border-line cases or are types of inadequate personality impossible of absolute classification. The actual symptoms are not always definite, and the reasons for rejection for military service must frequently lie in the judgment of the examiner and his ability to evaluate in terms of personality development or psychopathology the social histories of the men. . . . In the consideration of mental deficiency, [and before the advent of the standardized IQ or Armed Forces Qualifying Test] the standard for rejection was not always uniform, although generally understood to be a mentality of or below that of a child of 8 years. (Bailey, Williams, and Komora, 1929, p. 69)

In examining draft-age men from all over the country, the Army concluded that the prevalence of neuropsychiatric defects was “unexpectedly large” (Bailey, Williams, and Komora, 1929, p. ii). In retrospect, the World War I screening program seemed benign relative to the one conducted during World War II, which rejected five to six times more men for psychiatric reasons than were rejected during World War I. While the World War I program was judged to have been a success by Bailey, Salmon, and other World War I psychiatrists, this view was not universally held. Glass, 1966, p. 8, argues that, while the program eliminated at induction those with gross or overt mental disorders or defects, the “data of World War I do not demonstrate the validity of the screening process.”<sup>35</sup> By May 1, 1919, the Army had rejected 69,394; the largest group (21,858) had been rejected because of “mental defect” (Bailey, Williams, and Komora, 1929, p. 85). This screening, however, was but the first step in dealing with the problem of mental disorders during World War I.

<sup>34</sup> The Pershing cable is reproduced in Bailey, Williams, and Komora, 1929, p. 58.

<sup>35</sup> Binneveld, 1997, p. 88, notes that the issue of predisposition to breakdowns was not only viewed as relating to an individual's personality or family background, but “was applied to a larger category of people. . . . In practice this system of thought was open to a wide range of racial and class-based stereotypes.”



***Neuropsychiatric Services in the AEF***

On February 1, 1918, well before major combat action started, the director of psychiatry to the chief surgeon of the AEF reported that

mental cases [insanity, mental deficiency, and constitutional psychopathic states] can be expected to furnish a considerable proportion of all soldiers of the Expeditionary Forces who will have to be invalided home. Already these cases constitute 30 per cent of the total number so returned. (Salmon and Fenton, 1929, p. 267)

Salmon reported on how this challenge was met. The American system took full advantage of what the British and French had learned, namely that

patients with war neuroses improved more rapidly when treated in permanent hospitals near the front than at the base, better in casualty clearing stations . . . than even at advanced base hospitals, and better still when encouragement, rest, persuasion, and suggestion could be given in a combat organization itself. (Salmon and Fenton, 1929, p. 303)

Following the British model, a psychiatrist, with the rank of major, and a supporting staff were assigned to each division. A psychiatric ward was established in each general hospital, backed up by a special hospital for war neuroses. The division psychiatrists,

being with and a part of a tactical division, were able to exercise the preventive side of their specialty to the utmost advantage. . . . Without them the prompt treatment of functional nervous disorders in the hospitals attached to the fighting armies, which practically eliminated “shell shock” as a military problem in our troops, would not have been possible. (Lynch, Weed, and McAfee, 1923, p. 389)

To complement the division psychiatrists, on June 13, 1918, Circular No. 35, “The Management of Mental Diseases and War Neuroses in the American Expeditionary Forces,” was published. It provided detailed instructions for the care, evacuation, and transportation of neuropsychiatric patients and a complete list of the available facilities. Salmon and Fenton, 1929, p. 280, notes that this circular “set the standards of humanity which from the very first governed the treatment of this class of sick in the American Expeditionary Forces.”

The duties of medical officers detailed as psychiatrists in Army divisions were spelled out on in a circular from the Chief Surgeon of the AEF on January 15, 1918.<sup>36</sup> This reflected the conflict military psychiatrists faced between “the prime necessity of preserving, or restoring for military duty, as many. . . officers and enlisted” as possible and ensuring the “evacuation, with the least practicable delay, of all persons likely to continue ineffective or to endanger the morale of the organizations of which they are a

<sup>36</sup> See Circular 5, signed by the Chief Surgeon, as reproduced in Salmon and Fenton, 1929, pp. 303–305.

part" (Bradley, 1918). The enumerated "special duties" centered on the observation and treatment of officers and enlisted men concerning mental or nervous disease, including the diagnosis, management, and disposition of cases. Of particular concern was safeguarding the psychologically incapacitated from the disciplinary actions to which many who suffered from such conditions had previously been subject.<sup>37</sup>

The division psychiatrists were central to the implementation of the Army's policy of caring for mental patients in field hospitals close to the front and returning as many as possible to their own organizations within two to five days.<sup>38</sup> Salmon and Fenton, 1929, p. 306, reports, however, that, in most cases,

it was found or thought to be impracticable for division psychiatrists to station themselves in triages. No effort was possible, therefore, to distinguish between exhaustion, concussion, fear, and neurosis, and the diagnosis "shell shock" was indiscriminately used when men seemed to be suffering from any of these conditions. The result was that such cases were evacuated.

In general, the vast majority of cases were treated within the division and returned to the front in a matter of days. By one account in one sector, "of 400 war neuroses, embracing all types and occurring in different operations at the front, approximately 65 per cent were returned to front line duty after an average treatment period of four days" (Salmon and Fenton, 1929, p. 317). The incidents of "gas hysteria" presented a special case; relatively large numbers of troops presented a variety of "vague symptoms" for which "divisional gas officer[s] failed to find any clinical evidence of gas inhalation or burning" (Salmon and Fenton, 1929, p. 318).

Complementing the divisional resources were two echelons of special hospitals: Army neurological hospitals and base hospitals, the most important of which was Base Hospital 117. Three neurological hospitals were established a short distance behind the field hospitals. Their primary function was to return as many cases as possible to duty with their divisions, as quickly as possible. They cared for war neurosis patients who

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<sup>37</sup> Circular 35 required division psychiatrists to

[e]xamine enlisted men brought before general courts-martial. . . . They will also examine all other military delinquents brought to their attention, especially those in whom self-inflicted wounds or malingering is suspected. Except under exceptional circumstances, no cases of this kind will be evacuated to the rear until examined by the division psychiatrists. In the case of prisoners accused of crimes the maximum punishment of which is death, the division psychiatrist should, whenever practicable, have the assistance of a consultant in psychiatry. (as reproduced in Salmon and Fenton, 1929, p. 304)

<sup>38</sup> According to a September 25, 1918, circular letter:

Each division in the area has a division psychiatrist who will be stationed at the triage when his division is engaged. There he will sort all nervous cases, returning directly to their organizations those who should not be permitted to go to the rear and resting, warming, feeding, and treating others, particularly exhausted cases, if there is opportunity to do so, he will recommend all others for evacuation. (as reproduced in Salmon and Fenton, 1929, p. 309)

required more than a few days rest but who might recover within two or three weeks. On average, soldiers were back with their units within 10 days.<sup>39</sup>

More than 60 percent of those admitted to Army Neurological Hospital No. 1 were “restored” within an average of 10 to 14 days to a “state of apparent stability.”<sup>40</sup> The preferred treatment was rest when indicated, persuasion, suggestion, work, and psychological reeducation. Salmon and Fenton, 1929, p. 331, notes:

One of the most valuable assets in the treatment of the neuroses was the creation of a ward atmosphere of cure. The patients were quite observant of one another, and a cured case which they had seen from the beginning was a most useful asset.

Table 7.5 shows the disposition of cases from Army Neurological Hospital No. 1 between September 1918 and the Armistice on November 11, 1918, with 53 percent returning to their units and 34 percent being set to Base Hospital 117 for more-intense treatment. Relatively few, about 12 percent, were sent on to other hospitals.

Base Hospital 117 was the centerpiece of psychiatric care in Europe.<sup>41</sup> In a February 9, 1918, memorandum, Salmon, now on active duty as Director of the Division of Psychiatry at the AEF Headquarters, cogently argued for construction of a special hospital for the treatment of war neuroses. He based his arguments on the expected large number of cases and the effectiveness of such hospitals as demonstrated by the allies:

Three per cent of all casualties and 20 per cent of all discharges for disability from the British Army have resulted from . . . conditions to which the term “shell shock” has been applied. Although they are most frequent in soldiers exposed to shell fire, they are not uncommon among officers and men in training. A number of cases among officers and men are now under treatment in hospitals in the American

<sup>39</sup> According to Salmon and Fenton, 1929, p. 333:

The question of return to duty was complicated by the possibility of relapse. Of the 532 cases returned to duty, 15 cases were known to have come back to the hospital with relapses; none of them lasted more than one day under fire. Soon after the opening of the hospital 22 cases were returned to duty in one group and within 24 hours 11 of them (included in the above 15) were sent back with an assortment of hysterical symptoms. They had spent the night in a village that was heavily shelled.

<sup>40</sup> Salmon and Fenton, 1929, p. 329, describes it as a “condition in which they acknowledged that they felt well, in which they expressed themselves as willing and anxious to return to their organizations, and in which to all appearances they seemed to be able to do so.”

<sup>41</sup> Salmon and Fenton, 1929, p. 278, recounts the establishment of the special psychiatric hospital:

On June 16 [1918] the highly trained personnel of neuropsychiatrists, nurses, and occupational aides for Base Hospital No. 117 arrived . . . [and] rapidly became the center for scientific work and training in neuropsychiatry in the American Expeditionary Forces. . . . By September it was apparent that this hospital would have to be greatly enlarged and so plans were drawn for the addition of a sufficient number of beds to bring the capacity to 1,000. . . . The necessity for a convalescent camp operated in connection with Base Hospital No. 117 had already been shown by the disastrous results of allowing convalescent patients to go to general convalescent camps when they no longer required hospital treatment. . . . It was intended to provide for about 1,000 patients under an environment quite different from that of the hospital or of a general convalescent camp.

**Table 7.5**  
**Disposition of Cases for Army Neurological**  
**Hospital No. 1, Fall 1918**

Month	Returned to Duty	Destination Hospital	
		Base 117	Other
September	22	17	15
October	230	226	67
November	280	96	42
Total	532	339	124

SOURCE: Salmon and Fenton, 1929, p. 335.

Expeditionary Forces and 4.5 per cent of all officers and men already returned to the United States for discharge have been invalided for these diseases. These diseases are not only curable in the great majority of instances but their incidence among American troops will be determined very largely by the type of management employed. If they are regarded as incurable, except in special hospitals in the United States, and are all returned for treatment or discharge, several thousand more cases will result through the influence of this suggestion upon soldiers predisposed to these disorders than if they are efficiently treated and cured in France. In certain British “shell-shock” hospitals where the average period intervening between the onset of the disease and admission to a special hospital is about five months, less than 20 per cent are returned to duty of any kind. On the other hand, where these cases receive skilled attention in France, more than 60 per cent recover in an average period of treatment of only a few weeks. In the French neuropsychiatric centers established near the front, the percentage of recoveries is even larger.<sup>42</sup>

He also made it clear that the staff of the new hospital would be “carefully selected with nearly all of the medical officers having studied the war neuroses in special British military hospitals and all the female nurses and enlisted men having had experience with mental and nervous cases in civil institutions” (Salmon and Fenton, 1929, p. 356). The hospital he envisioned would not be just another step in the evacuation of nervous cases to the United States. This hospital would treat only selected patients who could benefit from “active curative treatment” with the prospect of being restored to full military duty.<sup>43</sup>

<sup>42</sup> From a memorandum by the Director Division of Psychiatry to the Chief Surgeon, General Headquarters (GHQ), AEF, February 9, 1918, as reproduced in Salmon and Fenton, 1929, p. 356.

<sup>43</sup> From a memorandum by the Director Division of Psychiatry to the Chief Surgeon, GHQ, AEF, March 10, 1918, as reproduced in Salmon and Fenton, 1929, p. 358.

This active curative treatment started with a return-to-duty attitude and included occupational therapy. Initially, patients helped build the hospital itself. This not only gave them something to do but also “showed to those with paralysis and tremors that it was possible for them to carry out coordinated movements and to make use of their movements in the production of tangible results” (Salmon and Fenton, 1929, p. 362). In total, almost 85 percent of the 3,000 patients that spent time at Base Hospital 117 were employed in some form of work therapy.

### ***Returning Neuropsychiatric Casualties***

While the number of neuropsychiatric casualties will never be known, 8,319 such patients returned to the United States by war’s end.<sup>44</sup> The Army reported 2,859 mental and nervous patients in military hospitals on June 25, 1919; 2,210 patients were still hospitalized by August 12, 1919 (Bailey, Williams, and Komora, 1929, pp. 52–53). Many of these, as beneficiaries of war-risk insurance programs, became wards of the USPHS and eventually were cared for by the Veterans’ Bureau (Strecker, 1944, p. 407).

Following the war, the Army undertook studies of the postwar transition to civilian life of soldiers that had been diagnosed as having war neurosis (1919–1920, 1924–1925) and had been patients at Base Hospital No. 117 in France.<sup>45</sup> In 1929, Fenton summarized the resulting judgments:

- On relative severity of symptoms:

Men who developed nervous symptoms . . . at home, [who] are usually viewed with suspicion by ordinary persons and regarded almost as malingerers by many, . . . do not readjust themselves nearly so well as the actual concussion cases; in other words, many men who never saw action have a more serious aftermath in symptoms than those who were actually in the thick of it, and . . . [saw] terrible sights at the front. (Fenton, 1929, p. 456)

- On what would later be called PTSD:

Among the cases of hysteria, the majority are having difficulty getting along in civil life, and, though earning their own living and seemingly carrying on their work, still they are constantly unhappy because of neurotic residues in the form of headache, insomnia, jumpiness, speech disorders, and often tics. On the whole, the men who had hysteria retain enough of their old condition to handicap them seriously in their personal lives. (Fenton, 1929, pp. 456–457)

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<sup>44</sup> This number is reported in Bailey, Williams, and Komora, 1929, p. 51. A smaller number is reported in Weed, 1923, Table 10, pp. 176–177. Weed categorized and counted three types of these patients: 4,117 as *mental* (psychotic or insane); 448 as *mentally defective*; and 2,543 as *neurotic*. Salmon later pointed out that the “higher rates of insanity in military personnel during war were due in part to the failure to recognize ‘the real nature of severe neuroses.’ He offered as evidence repeated instances in World War I of many soldiers suffering from undoubted war neuroses who were evacuated as psychotic or insane” (as cited in Glass, 1966, p. 4).

<sup>45</sup> Stretch, 1995, provides a summary discussion of each wave.

- On an age-related ability to adapt that became evident by 1924–1925:  
[There is a] tendency for the extremes of the [age] distribution to be less well readapted than the men of central groups. (Fenton, 1929, p. 469)
- On improvement over time:  
The 1924-25 follow-up group is of much more usefulness to society now than they were to the Army at the time of discharge from the hospital. This is a very significant improvement over the conditions in 1919-20 of a similar-sized group of war neurotics reached at that time who were as much a burden to society as they were to the American Expeditionary Forces. (Fenton, 1929, p. 473)<sup>46</sup>

### **Summary: The Rise of Military Psychiatry During the World War**

Building on the experience of the allies before the United States entered the war, the American program reflected a few key concepts that were revolutionary in 1916. It incorporated a number of concepts: *echelons of care* (many layers of treatment) and the principles of *proximity* (forward treatment), *immediacy* (early treatment in forward settings), *expectancy* (with the expectation that the soldier will return to his unit), *simplicity* (no involved or lengthy treatment, lest the soldier believe himself really very ill), *effective labeling* (the casualty tag of “not yet diagnosed” left the soldier with nothing to reinforce his notion that he was really sick, not just tired or a “little nervous”), and *centrality* (a central clearing point to evaluate casualties to ensure that those who might be returned to their units are not sent home) (Jones, 2000, pp. 3–5). These concepts were eventually rediscovered in World War II, but only after the failure to fully incorporate the lessons of World War I caused problems that could have been avoided.

## **Caring for Soldiers in the Zone of the Interior**

When Congress declared war in April 1917, the Army had 9,530 hospital beds, “distributed among 131 post hospitals, four general hospitals, and five base hospitals” (Weed, 1923, p. 25).<sup>47</sup> This would all change as the Army grew.

<sup>46</sup> Fenton could not explain the cause of the improvement but thought that it might be related to the “length of time, the improvement of business conditions, offering more opportunities for civilian reestablishment, and, perhaps most essential of all, the various governmental and social agencies focused upon the problem of soldier after care” (Fenton, 1929, p. 474).

<sup>47</sup> The majority of the post hospitals had between six and 48 beds; the largest had 178 beds. The general hospitals were for tuberculosis (400 beds) and “special chronic conditions” (250 beds); the base hospitals were in southern Texas to support operations along the border with Mexico as reported in Lynch, Weed, and McAfee, 1923, p. 327.



### **Army Hospitals During the Mobilization**

Initially, as the nation mobilized, the Army needed hospital spaces at the training camps.<sup>48</sup> At the Army's permanent bases, additional facilities were constructed in temporary buildings adjoining existing post hospitals. At the 32 cantonments and mobilization camps that received draftees and National Guard units, the Army built temporary facilities. Initial planning called for hospital capacity of 3.5 percent of the troops stationed at a camp. This was eventually revised to 4.5 percent, with hospitals ranging from 500 to 3,000 beds. While the army planned that a regular medical officer would command each hospital, with three or four regular noncommissioned officers to train the enlisted men, the vast majority of the staff for these the hospitals was drawn from civilian life and had no military experience or training.

### **Initial Care for the Returning War Wounded at Debarkation and General Hospitals**

The original medical plan—the theater evacuation policy—was to keep all sick and injured that could return to duty within six months in France. Those requiring longer care were to be returned to the United States. This necessitated substantial hospital capacity at the debarkation ports, based on the planning assumption that the average stay would be for no longer than 10 days.<sup>49</sup> Outside the two ports of debarkation—Hoboken, New Jersey (New York Harbor), and Newport News, Virginia—the Army saw the need for hospitals with a capacity equal to 7 percent of the total number of troops deployed overseas. The Army decided not to transfer patients to civilian hospitals but to “build” hospitals throughout the country in the 61 “draft districts” so that those returning could be cared for as near their homes as possible (Lynch, Weed, and McAfee, 1923, p. 330).

General hospitals were designated for patients with special needs. There were special facilities for patients with tuberculosis; psychiatric conditions;<sup>50</sup> and orthopedic, oral, and plastic surgery. Amputation centers were established that pooled orthopedic surgeons, physical and occupational therapists, reconstruction aides, and prosthesis manufacturing and fitting (Greenwood and Berry, 2005, p. 67).

To secure the needed hospital space, the Army leased civilian properties, including existing hospitals, hotels, colleges, and even loft buildings. When the war ended on November 11, 1918, the Army had 92 large hospitals with a combined bed capacity

<sup>48</sup> The mobilization of the Army and the associated medical program is described in Gorgas, 1919, pp. 362–432.

<sup>49</sup> As the Army's history of the period, Weed, 1923, p. 34, notes,

[t]he number of patients from the expeditionary forces precluded the possibility of retaining them at debarkation ports longer than a reasonably sufficient time for their clearance from the debarkation hospitals, and accommodations for them had to be provided [in general hospitals] elsewhere throughout the country.

<sup>50</sup> Weed, 1923, Table 10, pp. 176–177, reported that Army General Hospital 30 at Plattsburg, New York, received 86 percent of the psychiatric cases that were returned to the United States.

of 120,916 in the United States.<sup>51</sup> In addition to the existing hospitals, projects were under way to add another 60,000 beds in new Army hospitals, and two procurement boards were in the field with a long list of cities to be visited for the purpose of obtaining even more hospitals. After the Armistice, the Army stopped all ongoing efforts to procure new beds.

Patients from the Europe started to arrive in the United States during April 1918, with the last arriving in December 1919. In total, 147,868 patients returned home. Most were processed through the ports of New York (108,337) or Newport News (39,341), with a small number through Boston. The month of January 1919 was the busiest month at Newport News, with the arrival of 9,912 patients. The busiest month for the port of New York was March 1919, when 20,825 patients arrived (Weed, 1923, p. 171). Returning patients were transferred to specific hospitals based upon their home of record and their medical condition. The most prevalent conditions were medical (37.27 percent), surgical (36.14 percent), and orthopedic (8.95 percent). Smaller but significant numbers of cases were reported for head injuries (3.46 percent), tuberculosis (4.55 percent), and amputations (2.13 percent).<sup>52</sup> The categories of mental, mentally defective, and neurosis accounted for 5.23 percent of all cases (Weed, 1923, pp. 176–177).

### **Hospital Trains and the Distribution of Patients**

At the beginning of the war, the Medical Department had one hospital train that could carry 225 patients and 31 personnel to provide care en route. At the time of the armistice, the Army had four complete trains, 20 unit cars, and 20 leased kitchen cars. The unit cars proved the most flexible, since each car was a “complete unit, with a kitchen, toilets, beds for patients and support personnel” (Lynch, Weed, and McAfee, 1923, p. 334). A number of these cars could be attached to a train even as sections of the train were dropped off as the train proceeded. This facilitated the movement of the sick and wounded throughout the system.<sup>53</sup>

<sup>51</sup> Of the 120,916 beds available on Armistice Day, 27,367 were in 40 new general hospitals; 74,632 were in 35 camp hospitals; and 5,707 were in “department base” hospitals. At the two ports of debarkation there were 14 hospitals; 10,293 beds were available in New York and 2,917 at Newport News. Most of the beds, however, were already occupied—76,964; only 43,952 beds were vacant. See Weed, 1923, p. 113, and Lynch, Weed and McAfee, 1923, p. 340.

<sup>52</sup> The percentage of amputees reflects the numbers reported in Weed, 1923, Table 10 (2,901 amputees and 136,097 total patients). This is fewer than the 4,403 amputation cases “returned to the United States” reported in Brackett, 1927, pp. 718–719.

<sup>53</sup> According to Lynch, Weed, and McAfee, 1923, p. 336: “During the year beginning July 1, 1918, and ending June 30, 1919, . . . [the army] transfer[ed] 33,934 patients from hospital to hospital of the interior, 97,271 overseas patients from the port of Hoboken, N.J., and 37,564 from Newport News, VA.”

### The Development of Special Programs for Physical Reconstruction and Vocational Training

Just as the Army's psychiatric programs were based on those of the allies, so were the programs for the physical rehabilitation of wounded soldiers. Within a month of the United States entering the World War, the Army Surgeon General sent a team to Great Britain to study and report on its program for the physical reconstruction of wounded soldiers.<sup>54</sup> The team reported that "the problem of physical reconstruction was too broad to be confined to orthopedics alone, as it applied to all branches of medicine and surgery" and, while it was desirable to cooperate with the "various organizations for civil aid," the team "emphasized the necessity of keeping the prospective patient under military medical control until they would be able to assume wage-earning positions or enter upon an arranged and definite source of occupational training" (Crane, 1927, p. 3).

Before the end of summer 1917, the Surgeon General formed the Division of Special Hospitals and Physical Reconstruction for the

reception, classification, distribution, treatment and care in the United States of invalided officers and men, and for [not only their] curative treatment and education, . . . but also to take measures for securing employment for them when discharged. (Crane, 1927, p. 4)

Over the next several months, the new division worked to develop a full plan that could be funded and implemented.

### The Surgeon General's Plan

On November 7, 1917, the Surgeon General submitted his plan to the Secretary of War. The plan contained a very expansive role for the Army Medical Department, one that went far beyond ensuring that soldiers who could return to duty remained in the Army. As the Surgeon General saw it, the "purpose" of his program was to ensure that disabled soldiers "discharged from the Army . . . [were] functionally restored as far as possible and . . . receive[d] proper training that will enable them to overcome their handicap" (Surgeon General of the Army, 1917).

The Surgeon General's recommendations were extremely ambitious and included the following (Surgeon General of the Army, 1917):

1. "Men physically unfit for further service . . . [be] discharged . . . [only if they had] attained the maximum cure and . . . [were] able to follow useful occupa-

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<sup>54</sup> The Army defined *physical reconstruction* as

all medical and surgical measures which will functionally restore the disabled to as near normal as possible. Rehabilitation consists in training the disabled man to again be a productive agent in spite of his handicap. . . . The reeducation of disabled members and the vocational training of men so disabled that they must learn a new occupation. (Surgeon General of the Army, 1917)

tions. If the invalided soldiers [were] unable to follow their previous or other occupation without special training, they [were to] be transferred to a general hospital in their home district (to undergo further training)."

2. Only in cases of brain and spinal cord injuries, "where there is no hope of improvement," were these "helpless patients" to be discharged and then only to "friends or relatives" or "to a soldier's home or special hospital for permanent care."
3. Carrying out this scheme, Surgeon General of the Army, 1917, told the Secretary of War,

will require the retention of men in the military service for a period varying from a minimum of six months to a longer period for those taking longer courses. . . . For the duration of the war the authority of the Secretary of War would be sufficient. For those who would be held after the declaration of peace there would be required in most instances special legislative authority . . . [or possibly the] reenlistment into the service of men who need training. It would seem to be a much simpler and better method for all concerned to not discharge the men at all prior to the completion of their course if they are to receive training. . . . [And], with further reference to the question of employment of handicapped men, the general plan is to have at each hospital the properly qualified employment agent, who may be an officer or a civilian.

On December 4, 1917, the Surgeon General elaborated on his plan, explaining that "rehabilitation consists in training the disabled man to again be a productive agent in spite of his handicap" (as reported by Crane, 1927, p. 28). Military control, he added in rather draconian terms, did not mean

the strict Army discipline or assuming the right to dictate as to his training without considering the man's individual desires, but rather the man must be made to understand that before he is discharged from the Army he is to be functionally restored as far as possible and is to receive proper training that will enable him to overcome his handicap. (Crane, 1927, p. 28)

It is recommended that the man be not discharged from the Army until his medical reconstruction is completed and he is able to return to his former occupation, or until his medical reconstruction and his training for some new occupation (made necessary because of the nature of his disability) is completed. (Crane, 1927, p. 30)

To carry out the plan, the Surgeon General intended to establish "vocational schools and shops" and to create a "Teaching corps [taking] . . . some men from

the drafted Army” (Crane, 1927, p. 31). Further, anticipating the GI Bill of a later generation,<sup>55</sup> he proposed that

men who have had the equivalent of a high-school course and are otherwise eligible to entrance in a recognized college will be assigned to professional courses. If the man is retained in the Army, his pay as a private will support him during his college courses. It is recommended that the man be retained in the Army until the completion of the professional course in the college. He should then be discharged from the Army, and will enter civilian life fully equipped to earn his own living in the profession for which he has been trained. (Crane, 1927, p. 33)

### **The Need to Coordinate Plans with Other Departments**

On January 5, 1918, the Secretary of War reminded the Surgeon General that other departments were considering similar plans and asked him to prepare a new plan that would “introduce unity and cooperation in the whole scheme” (Crane, 1927, p. 36). Nine days later, on January 14, 1918, the Surgeon General hosted an interagency planning meeting, which established a committee to work toward a coordinated approach.<sup>56</sup>

The committee struggled with the concepts of reconstruction and rehabilitation. All agreed that the Army and Navy should be responsible for the reconstruction of invalid service members before their separation, and that a presidential board should be “responsible for rehabilitation of the disabled after the medical and surgical work was completed” (Crane, 1927, p. 37).

Despite apparent progress in the interagency forum that led to the passage of the Smith-Sears Act of 1918,<sup>57</sup> which Congress passed unanimously on June 27, 1918, the issue of coordination was far from settled:

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<sup>55</sup> While *GI* may once have stood for “government” or “general” issue, the process of its adoption as a term for any member of the U.S. armed forces, especially members of the Army, began before World War II.

<sup>56</sup> According to Crane, 1927, pp. 36–37:

Representatives present [were] from the medical section of the Council of National Defense, Medical Department of the Navy, United States Public Health Service, United States Employees’ Compensation Bureau, American National Red Cross, War Risk Insurance Bureau, Treasury Department, Federal Board for Vocational Education, Department of Labor, American Federation of Labor, United States Chamber of Commerce, National Manufacturers’ Association, Red Cross Institute for Disabled and Crippled Men, civilian medical profession, medical department of the Canadian Army, and the Office of the Surgeon General of the Army.

<sup>57</sup> The Smith-Sears Act of 1918 was the third in a series of laws to address the address the issue of rehabilitation for returning veterans. The three laws were

- 1916—The National Defense Act, which provided an opportunity for soldiers to receive instruction to facilitate their return to civilian life. For the first time legislatively, the country recognized its obligation to persons injured in service to their country.
- 1917—The Smith-Hughes Act, which established the Federal-State Program in vocational education. It created a Federal Board of Vocational Education with the authority and responsibility for vocational rehabilitation of disabled veterans.

- On April 29, 1918, the Surgeon General designated specific hospitals to send patients to for physical reconstruction; for example, amputations other than fingers and toes were to be sent to Walter Reed General Hospital in Washington, D.C. He also told hospital commanders that

no member of the military service should be recommended for discharge from your hospital until he has attained complete recovery or as complete recovery as it is to be expected he will attain when the nature of this disability is considered. (Crane, 1927, p. 8)

- On May 6, 1918, the Secretary of War, based on the committee's progress as reported to him by the Surgeon General, authorized that the Medical Department to

proceed with the scheme for reconstruction of officers and enlisted men of the Army alone without consideration of the other bureaus of Government involved, this reconstruction to be clearly understood to end at the point where the medical reconstruction ceases. (Crane, 1927, p. 38)

- On June 3, 1918, the Surgeon General redefined the term *reconstruction* to include much of what had previously been considered rehabilitation. The reconstruction program of the Medical Department would henceforth treat diseases and injuries in a way that embraced both anatomical and functional restoration and would use physiotherapy in continued treatment; further functional restoration by supplying "curative occupation in the form of manual and mental work at the bedside and in shops"; provide occupational therapy through an "education department, the function of which is to develop along modern lines the personnel and equipment necessary"; and assign general hospitals for the "reconstruction of disabled soldiers" (Crane, 1927, pp. 39–40).

The fact that the Surgeon General was giving no more than lip service to the agreements reached in the early winter of 1918 and codified with the passage of the Smith-Sears Act can be seen in the way the Army "cooperated" with the Federal Board for Vocational Rehabilitation. The Army's official history recounts the events:

Application was made to the Surgeon General of the Army late in June 1918, for permission to send representatives of the Federal Board for Vocational Education into Army hospitals to explain to disabled men the benefits of the new [Smith-Sears Act] law. This permission was not given until after the armistice began, on the grounds that the rehabilitated men would be needed in the Army for limited

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- 1918—The Smith-Sears Veterans Rehabilitation Act, which expanded the role of the Federal Board of Vocational Education to provide services for vocational rehabilitation of veterans disabled during World War I. This is also referred to as the Soldier's Rehabilitation Act.



service and should not be brought into contact with civilians seeking their ultimate restoration to industrial life. (Crane, 1927, p. 254)<sup>58</sup>

The underlying assumption for all the Surgeon General's planning was that battle casualties would supply a steady stream of reconstruction cases. The sudden capitulation of Germany on November 11, 1918, changed all that. Planning assumptions that saw a need "to establish reconstruction work in 16 specialized hospitals in order to provide 60,000 beds" (Crane, 1927, p. 38) were put aside as the whole reconstruction program was truncated in size, scope, and duration in the rush to demobilize.

### **Demobilization of the Army's Physical Reconstruction and Vocational Education Program**

Even after the Armistice, the Surgeon General intended "all disabled soldiers [to] have as complete functional and physical restoration as possible in the military hospital in order to be a fit subject for training by the Federal Board for Vocational Education" (Crane, 1927, p. 44). This plan, however, faced two formidable obstacles: the lack of trained personnel to carry out the program and the desires of disembarking soldiers to return home as soon as possible. Even though tens of thousands of returning soldiers received some form of vocational educational training in Army hospitals and convalescent centers the year following the Armistice, the program was a shadow of what it might have been.

#### ***Trained Personnel***

Before the Armistice, the Army had started to staff its reconstruction and vocational education programs with women who, as civilian employees of the Medical Department, could fill the role of reconstruction or occupational aides,<sup>59</sup> and with men who were specially qualified as educators and who had previously been found unfit for military service or were over age. The plan was to offer the men commissions in the

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<sup>58</sup> On September 25, 1918, the Surgeon General notified the commanding officers of Army hospitals that his office was in charge of all educational work, whether it was for "therapeutic purposes or for vocational preparation for special or limited Army service." He authorized them to cooperate with the representatives of the Federal Board for Vocational Education "in the case of men who would be discharged from military service after the completion of their hospital treatment." He suggested that cooperation might include providing them with office space, access to the patient who was recommended for discharge, and copies of their educational and vocational histories. They were not to be given military or medical histories (these were considered private) or to be allowed to interview patients in the wards. At the time, it was considered inadvisable to permit the promiscuous circulation in hospitals of the representatives of an agency which was necessarily concerned solely with the training of men for civil pursuits and who were required to make the opportunities which they offered as attractive as possible (Crane, 1927, p. 86).

<sup>59</sup> Recruitment for civilians who could serve either as reconstruction or occupational aides started on December 31, 1917, and January 5, 1918, respectively. The aides were trained at either civilian schools, with an approved course of study authorized by the Surgeon General, or in Army schools recently set up for that purpose. See Crane, 1927, pp. 56–60.

Sanitary Corps of the Medical Department. The end of the war stopped that program, and the Surgeon General was forced to use men already in the Army, most of whom, Crane, 1927, p. 54, notes, “had neither previous experience, training, nor aptitude for the work of instruction.” Through spring and summer 1919, the Surgeon General struggled to keep the program staffed with civilian women aides, enlisted men who volunteered for one year of additional service, and officers willing to transfer from other branches. Days before the September 30, 1919, deadline for the release of all temporary officers, the Secretary of War gave the Medical Department permission to retain 2,000 officers who held commissions “for the emergency only.” Table 7.6 shows how the program grew during 1918 and 1919. While the majority of the officers and enlisted men worked in the reconstruction hospitals, the majority of the reconstruction aides worked at the few general hospitals with physiotherapy departments. The staff buildup peaked in March 1919, at about the same time patient load peaked. The patient population, however, dropped sharply after that, even as the staffing remained relatively stable.

Patients

The Surgeon General’s desire was to retain all disabled men “sufficiently long to effect maximum restoration of function,” but by one account, “everyone seemed to have an

**Table 7.6**  
**Staffing of Army Reconstruction and Physiotherapy Programs After the Armistice, Zone of the Interior**

	1918			1919					
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Reconstruction hospitals and staff (number)									
Hospitals	16	17	25	27	41	44	45	40	40
Commissioned officers	37	43	162	125	210	270	264	252	250
Enlisted men	335	314	695	681	809	888	808	750	603
Reconstruction aides	124	157	337	449	806	1,163	1,290	1,383	1,380
Total	496	514	1,194	1,255	1,825	2,321	2,362	2,385	2,233
Hospitals with physiotherapy departments and staff (number)									
Hospitals	9	11	13	27	32	40	40	45	
Commissioned officers	12	14	19	32	37	39	44	45	
Enlisted men	25	29	36	40	60	75	60	54	
Reconstruction aides	125	378	504	530	674	718	748	700	
Total	162	421	559	602	771	832	852	799	

SOURCE: Adapted from Crane, 1927, p. 60.

almost uncontrollable desire to get out of the service and to go home and do nothing but rest for several months” (Crane, 1927, p. 49). By the end of 1918, less than two months after the Armistice, the Department of War was allowing disabled men to leave “on their own application, who furnished documents from relatives or friends which guaranteed the necessary specialists treatment after discharge” (Crane, 1927, p. 49).

At the time of the Armistice, the Army had 41 general hospitals in the United States, with a total bed capacity of 27,367.<sup>60</sup> As shown in Table 7.7, within a month after the Armistice, 25 hospitals were caring for more than 23,000 reconstruction patients, about one-quarter of whom were enrolled in vocational courses.<sup>61</sup> The most prevalent type of case in the reconstruction hospitals was “general orthopedics,” of which amputations accounted for about 8 percent. The peak demands on the Medical Department’s reconstruction program occurred in March 1919 and fell off sharply after that. On June 20, 1919, the Surgeon General closed the Division of Physical Reconstruction, transferring its function to a section under the Division of Hospitals. On November 9, 1919, just days short of the first anniversary of the Armistice, the Department of War announced a new policy, that all chronically disabled military personnel

should be discharged after one year in hospital. If too sick to be moved or unable to provide the necessary care for themselves, they were to be retained until provisions were made for them by the War Risk Insurance Bureau . . . relieving the War Department from further responsibility for treatment. (Crane, 1927, p. 51)

### Three Governmental Organizations Share the Responsibility for Caring for Disabled Veterans

Before the advent of World War I, about 400,000 men were receiving some form of “invalid” pension.<sup>62</sup> The national home had 17,000 residents (Adkins, 1967, p. 87).

<sup>60</sup> Calculated from Weed, 1923, Table 8, p. 113. In addition, there were 74,632 beds at camp hospitals throughout the United States and 10,293 and 2,917 beds at the debarkation ports of New York and Newport News, Virginia, respectively. Beds were also available at the department base hospitals at Fort Bliss, Texas (791), Fort Riley, Kansas (3,068) and Fort Sam Houston, Texas (1,848).

<sup>61</sup> In addition, the Army established convalescent centers and “development battalions” to provide interim care between the time a soldier was released from a hospital and the time he was able to report for full duty or was discharged. This was often referred to as a “hardening process before [a patient’s] return to routine duty” (Crane, 1927, p. 213). The program often included outpatient treatment at the hospital or a clinic and work in a curative workshop or at an educational activity on base. On November 1, 1918, 95,360 soldiers were in such organizations, with approximately 36,000 joining and leaving each month (Crane, 1927, p. 215). After the Armistice, 17,439 soldiers entered the 19 convalescent centers in January 1919; “10,210 were discharged within two weeks . . . raising question of the probable value of the curative workshop” (Crane, 1927, p. 222).

<sup>62</sup> Of the 403,000 invalid pensioners on the rolls on June 30, 1916, roughly 39,000 were “general law” disabled pensioners from the Civil War; 322,000 were old age “survivors” of the Civil War added to the rolls by act of Con-

**Table 7.7**  
**Army Reconstruction Program After the Armistice: Staff, Patient Population, and Educational Enrollment by Case Type**

	1918			1919											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Number of Hospitals	16	17	25	27	41	44	45	42	38	23	17	16	15	14	13
Staff															
Commissioned officers	37	43	162	125	210	270	264	252	250						
Enlisted men	335	314	695	681	809	888	808	750	603						
Reconstruction aids	124	157	337	449	806	1,163	1,290	1,383	1,380						
Total	496	514	1,194	1,255	1,825	2,321	2,362	2,385	2,233						
Patient Population															
Total patient population	12,048	12,794	23,455	28,023	65,022	73,319	66,640	62,964	55,554	37,546	30,258	24,737	24,112	22,305	19,616
Individuals enrolled in educational services		4,387	5,292	8,167	16,296	24,969	28,500	30,096	26,339	20,578	15,994	14,244	14,072	13,598	11,895
Percent enrolled		34.3	22.6	29.1	25.1	34.1	42.8	47.8	47.4	54.8	52.9	57.6	58.4	61.0	60.6
Types of cases registered for educational work (percent)															
Orthopedic			17.8	24.0	31.8	27.1	28.2								
Pulmonary tuberculosis			26.1	26.1	8.1	16.9	12.8								
Disease & wounds			5.2	9.1	18.8	9.1	9.5								
Convalescents			5.1	3.3	8.4	8.7	11.7								
General medical			7.6	5.7	6.1	7.2	7.6								
General surgical			3.4	6.1	5.9	8.5	7.0								
Amputations			8.0	8.8	6.9	6.1	5.6								

Table 7.7—Continued

	1918			1919											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Nervous system			5.0	5.2	3.9	4.5	6.4								
Neuroses			4.6	2.3	3.5	3.9	4.2								
Eyes, ear, and nose and throat			5.0	4.3	2.7	2.9	3.6								
Cardiovascular			10.3	3.1	2.7	1.7	1.8								
Insanity			1.8	1.9	1.3	3.4	1.6								
Total			6,165	7,317	12,462	18,524	18,537								

Most were still veterans of the Civil War, but the much-maligned organizations that served them, the Pension Bureau and the Soldiers Homes, would not serve the new crop of war veterans. There would be a new set of “efficient and nonpartisan” institutions responsible for caring for the disabled veterans of World War I: the Bureau of War Risk Insurance would provide the funds; the Federal Board for Vocational Education would provide vocational reeducation; and the USPHS would provide medical care.<sup>63</sup>

### The Bureau of War Risk Insurance

Originally established in 1914 to provide insurance to the owners of maritime ships against loss or damage from German submarine attacks, the War Risk Insurance program became a radical departure from traditional veterans’ programs. It successfully bypassed the old Civil War “apparatus . . . built a firewall around the old pension system” (Ortiz, 2010, Ch. 2). The Committee of Labor of the Advisory Committee of National Defense, chaired by Samuel Gompers of the American Federation of Labor, recommended that the War Risk Insurance Act be amended to provide for the readjustment and rehabilitation of returning veterans. The recommendations were based on the novel idea that the family should be provided for while the head of the family was in the service.<sup>64</sup> The committee’s proposal had five provisions (Adkins, 1967, pp. 92–93):

- *Monthly allotments for dependents of enlisted men.* Deductions were taken from the pay of enlisted men and sent to their families or dependent relatives, supplemented by monthly family allowances from the government. The deductions were compulsory on behalf of wives and children but were voluntary for others. The law prescribed that the government would pay the wife \$15 per month, \$10 more for the first child, \$7.50 for the second, and \$5.00 for each child thereafter.

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gress in 1890, 1907, and 1912. There were 24,000 invalid pensioners from the Spanish-American War. Almost 300,000 widows were receiving pensions. Most of these pensions were as a result of their husbands’ service during the Civil War. Commission of Pensions reported that these pensions were authorized by Congressional action taken on April 19, 1908. See Saltzgaber, 1916, pp. 5, 6, and 12.

<sup>63</sup> Ortiz, 2010, Ch. 1, notes how “[p]rogressive-minded ideals of bureaucratic efficiency and non-partisanship sought to fashion a new system of benefits and pensions for Great War veterans. The corrupt, sectional, and partisan Civil War pension system created during the Gilded Age served as a negative point of reference.”

<sup>64</sup> Paul Douglas, the eminent labor economist and later a U.S. Senator from Illinois, described the act as

more comprehensive and liberal than that of any other belligerent country. It not only protects the family of the man in service and compensates them should he die or be totally disabled, but protects the single man as well who has been disabled. The man who is partially disabled is given a money grant as well as every inducement and opportunity to educate himself. It affords, moreover, an opportunity for the enlisted man to provide greater protection for his family by offering him insurance at low rates. Children who upon reaching eighteen years would pass from under the compensation provisions can now be insured a good education. Brothers and sisters can be provided for as well. In short, the act enables the standard of living of the families of men in service to be maintained and in some cases actually to be raised. The more ultimate effects of the act are no less striking. It removes the necessity and should remove the possibility of both disability and service-pension legislation. (Douglas, 1918, p. 481)



ter, to a maximum payment to the family of \$50. The soldier could match the government's payment, assigning up to one-half his pay to his family but no less than \$15 per month (Glasson, 1918, p. 288). At the time, the median household income in the United States was \$57 per month.<sup>65</sup>

- *Compensation for injuries sustained in active military service.* The amount of compensation varied according to the degree of disability, and families received compensation for deaths occurring in the line of duty.
- *Voluntary personal insurance.* A voluntary insurance program against death and total disability was made available at peacetime rates.
- *Treatment for injuries sustained.* Those injured in the line of duty could expect medical and surgical hospital care and prosthetic appliances.
- *Vocational rehabilitation.* Those who had been injured in the service to the extent they could not resume their prewar occupations could expect training for a new one.

Replacing the standard military pension system that had been in place since the Civil War, this plan was similar to those provided under workers' compensations laws, except that compensation was not based on the salary or wages of the injured person but on "the number and dependency of the family" (Weber and Schmeckebier, 1934, p. 119).

This radical proposal received strong bipartisan support. Former President Theodore Roosevelt wrote Judge Julian W. Mack,<sup>66</sup> the principal author of the program, to say "it was a great step forward, . . . [putting] the United States . . . in the forefront among the nations in doing justice to our defenders" (Adkins, 1967, p. 93). Secretary of the Treasury William McAdoo, in presenting the proposed legislation to President Wilson, remarked that the

proposed provisions for the men and their dependents should not be offered as gratuities or pensions, and they should not be deferred until the end of the war. The wives and children, the dependent mothers and fathers of the men should not be left, as in previous wars, to the uncertain charity of the communities in which

<sup>65</sup> This provision had profound effects for blacks, especially in the South. While blacks had not been permitted to enlist in any large numbers, they were drafted at a rate that exceeded their fair share of all those registered in the new Selective Service System: "In all, 367,710 blacks were inducted. Although blacks constituted 9.63% of the total registration, they were 13.08% of those drafted. While 34.10% of all black registrants were ultimately inducted, only 24.04% of whites were drafted" (Murray, 1971, p. 58). Also see Keith, 2001, p. 351. One of the things lacking in the rural south was hard cash. Most blacks were sharecroppers and never received hard currency. They lived under a system that tied them to the land. Now, under the provisions of the War Risk Insurance Act, currency started to flow into the hands of the families of black draftees. According to Chambers, 1987, p. 185, "there were instances of wives bringing their husbands to the draft boards for induction in order to guarantee a regular income for their family." These funds would later finance the continued migration of blacks to Northern cities, such as Chicago, after World War I.

<sup>66</sup> For a further discussion of the passage of this act, see Douglas, 1918.

they live. The minds of our soldiers and sailors should be put to rest, so far as their loved ones are concerned, by the knowledge that they will be amply provided for by their Government as a part of the compensation for the service they are rendering to their country. . . . They should know in advance that . . . if they are disabled, totally or partially, . . . definite provision is made for them, and that they are not going to be left to the uncertain chances of future legislation or to the scandals of our old pension system. (Adkins, 1967, p. 94)

President Wilson provided his “entire approval,” and the act passed Congress on October 6, 1917. By Armistice Day, however, the mechanisms to implement the program were not yet in place, particularly those pertaining to the continuing medical treatment and rehabilitative services the war’s wounded would need. Claims processed, which included disability ratings and hospitalization authorizations, became a bureaucratic quagmire. Unfortunately, the Bureau of War Risk Insurance could not handle the more than 250,000 claims filed by the end of June 1919. Even after the medical evaluation process was decentralized to 14 district offices, the backlog was not eliminated until 1922 (Adkins, 1967, p. 103). The problem, however, was not just the lack of preparedness of the peacetime agencies of government. By the end of May 1921, more than 200,000 veterans had passed through the hospitals of the USPHS, with over 16,000 then in residence (USPHS, 1921, p. 1172).

### **A New Role for the U.S. Public Health Service**

The USPHS dates its founding to July 16, 1798, when Congress created the Marine Hospital Service “to furnish medical care to sick and disabled seamen of the American Merchant Marine, either in hospitals maintained by the United States, or by contract with civilian institutions” (USPHS, 1921, p. 1665). A 20-cent-per-month-per-sailor tax on American vessels, which customs agents collected at the ports, paid for this service, putting it under the jurisdiction of the Department of the Treasury. Since the service’s medical officers working at the ports were often the first to diagnose communicable diseases coming into the United States from abroad, a broader public health role as quarantine officers soon followed. It took a century, however, for Congress to formally recognize the service’s role in controlling diseases. In recognition of this, Congress renamed it the Public Health and Marine Hospital Service in 1902, finally giving the organization its current name ten years later.

By World War I, besides operating the maritime hospitals and the hospitals on Indian reservations, the USPHS operated maritime quarantine stations, medically examined all immigrants, cooperated with state and local authorities to suppress epidemics, and undertook medical research to “study and investigate the diseases of man” (USPHS, 1921, p. 1168). To this list of responsibilities, Congress added authorization on March 3, 1919, for the USPHS to furnish additional hospital facilities to beneficiaries of the Bureau of War Risk Insurance.

The USPHS was not well prepared for these additional responsibilities. At the time, it operated 20 hospitals with a total capacity of 1,500 beds. Even with the added 13,222 beds at the 14 hospitals the Army had transferred to the USPHS by July 1919, it had to use contract hospitals extensively to meet the demand.<sup>67</sup> Over time, the USPHS's efforts grew: By June 1920, the USPHS operated 52 hospitals with a capacity of 11,639 beds. By May 1921, it was operating 61 hospitals with a capacity of 18,500 and had taken over the responsibility the Army had held since the Civil War to provide Union veterans with orthopedic apparatuses.

### **A New Paradigm for the Care of the War Wounded: Vocational Rehabilitation**

The third part of the federal triad to provide services to returning veterans was the Federal Board for Vocational Education. The board had been established under Section 6 of the Smith-Hughes Act of 1918, culminating a long struggle to provide vocational education in the nation's public schools. Ten years earlier, President Theodore Roosevelt had urged schools to provide industrial education in urban centers and agricultural education in rural areas. In 1910, the American Federation of Labor and the National Association of Manufacturers formed an alliance to support federal funding for vocational education; in 1914, Congress authorized President Woodrow Wilson to appoint a commission to study federal aid to vocational education. The commission recommended separately administered, narrowly focused vocational training as the best way to help nonacademic students secure employment after completing high school.

While not the original focus of the Smith-Hughes Act, the newly established Federal Board for Vocational Education decided that its patriotic duty was to support the war effort by providing training to meet the skill demands of a rapidly mobilizing economy and, by providing services to veterans, including war casualties, to enable them to be productive members of society after the war.

### ***Mobilization***

The Federal Board for Vocational Education took its lead from the National Defense Act of 1916:

In addition to military training, soldiers while in active service shall hereafter be given the opportunity to study and receive instruction upon educational lines of such character as to increase their military efficiency and enable them to return to civil life better equipped for industrial, commercial, and general business opportunities. (Obermann, 1965, p. 148)

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<sup>67</sup> From September 1919 to June 1920, 19,610 veterans were admitted to contract hospitals and "2 years later there were 47,962 admissions to non-Federal hospitals" (Adkins, 1967, p. 105). The Army planned to retain only five general hospitals. These hospitals had provided 7,369 beds during the war but would now be resized to a permanent capacity of 3,750. See Weed, 1923, p. 190.

Within a month after the entering World War I, the board was operational. It sent its first report to Congress on December 1, 1917:

The war has fortunately brought home to the country both the fact of our need for vocationally trained men and women, and the fact of our want of facilities for training men and women vocationally. The war has, furthermore, disclosed a military and industrial shortage of trained workers, and without doubt has stimulated the States in their response to the cooperation offered by the vocational education act. . . . [a]t the request of the War Department and the United States Shipping Board, [the Federal Board for Vocational Education] has undertaken to assist in securing the training of men especially needed in the prosecution of the war. . . . This Board, cooperating with other departments of the Government, has undertaken the establishment of a series of special war-training classes, designed, in the main, to fit drafted men not yet called to the cantonments for various occupations requiring other than military schooling. (Houston, 1917, pp. 7–9)

By November 27, 1917, the board reported that 48 schools had been established to “institute a comprehensive system of preliminary training of men of the second and subsequent drafts as radio and buzzer operators” (Houston, 1917, p. 14). By November 1918, over 35,000 men had been enrolled in war training classes (Prosser, 1918, p. 37). The board paid one-half of the salaries of the instructors in the courses, the other half being paid by their state departments of vocational education (Prosser, 1918, p. 24).

### ***Demobilization and Care for Veterans***

The Federal Board for Vocational Education, along with a number of other agencies, was also concerned about the vocational reeducation and placement of disabled soldiers and sailors. The October 6, 1917, amendments to the War Risk Insurance Act provided a general endorsement of the government’s commitment to vocational rehabilitation:

That in case of dismemberment, of injuries to sight or hearing, and of other injuries commonly causing permanent disability, the injured person shall follow such course or courses of rehabilitation, and vocational training as the United States may provide or procure to be provided. (as quoted in Obermann, 1965, p. 150)<sup>68</sup>

While not explicitly authorized by the Smith-Hughes Act to do so, the board used its general authority to “investigate . . . such facts as may be necessary in the formulation, at an early date, of a plan to meet the situation which is expected to arise upon the return to this country of war cripples” to provide services to returning veterans (Houston, 1917, p. 10).

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<sup>68</sup> The act even contemplated that veterans might be reenlisted into the military or naval service, at full pay, for the purpose of receiving treatment. The federal board had another idea, which was not adopted: establishing a commission to train men disabled in service.

As previously noted, on January 14, 1918, the Surgeon General convened a conference involving at least 15 agencies to plan and coordinate activities to support returning disabled veterans. As a direct result of that conference and its follow-on activities, Congress unanimously passed the Smith-Sears Act on June 27, 1918. The act, also known as the Soldiers' Rehabilitation Act, provided that

- disabled men would be, so far as possible, restored to health in Army and Navy hospitals and would be discharged from service at the end of their convalescence
- the Bureau of War Risk Insurance would provide disability compensation and allowances for dependent support while men are in vocational training
- the Federal Board for Vocational Education would provide vocational rehabilitation training (via Soldier Rehabilitation Division).<sup>69</sup>

Given the requirement to supply continuous vocational training, board representatives immediately asked permission from the Army and Navy to visit their hospitals to explain the benefits of the new law to the disabled.<sup>70</sup> While the Navy granted permission, the Army refused. Board representatives finally received permission to enter Army hospitals one month after the Armistice. While the war went on, the Army had other plans for its wounded soldiers. Once soldiers were physically rehabilitated, the Army saw a need for "noncombative service" and did not want its disabled soldiers "brought into contact with civilians seeking their ultimate restoration to industrial life" (Wilson, 1920, p. 263).

As already noted, several of the conditions anticipated in the 1918 act did not come to pass. Rather than a centralized system, with disabled service members concentrated in a few military hospitals, what developed was a decentralized effort throughout the United States. The Department of War expected to have between 15 and 20 discharge points, but under pressure for a rapid discharge process, the number grew to over 300. In its 1920 annual report, the Federal Board for Vocational Education observed that

[t]housands of disabled men returned to civilian life without any knowledge whatever of the rehabilitation law. . . . A very large number of disabled men were sent

<sup>69</sup> Anticipating the passage of the act, the federal board commissioned the landmark study, *The Evolution of National Systems of Vocational Reeducation for Disabled Soldiers and Sailors*, which chronicled the experience of the European powers that had been dealing with this problem for some time. (McMurtrie, 1918)

<sup>70</sup> The Federal Board for Vocational Education, 1918, pp. 3–5, prepared a monograph to

inform all those interested as to what the Federal Board for Vocational Education can do for those disabled in this war. . . . The Federal Board stands ready to give you training, if you need it, for any occupation for which you, with your disability, may be fitted along professional, agricultural, commercial, industrial, or trade lines. So anxious is the Government to give each disabled man the widest possible opportunity, according to his handicap and his previous experience and ability, that it is ready to use all the existing educational facilities of the country, including those to be found in schools, offices, farms, and workshops.

out from the Army hospitals between June 28 and December 11, 1918. The seeking out all over the United States of these tens of thousands of men in order to make them aware of their rights under the law has been a difficult and expensive task. (Wilson, 1920, p. 264)

During the last month of 1918 and the first four months of 1919, an average of 23,000 disabled service members were discharged (Munroe, 1918, p. 22). By September 1919, more than 183,000 disabled veterans had registered with the board, and 16,000 had been approved for some form of vocational reeducation and training.

The 1918 law had established two classes of benefits. Section 2 provided that disabled veterans receive free vocational training and disability payments based on the severity of the disability, as established by the Bureau of War Risk Insurance. According to Munroe, 1918, p. 7, the program was

intended for those cases suffering from disabilities that have resulted in vocational handicaps, and . . . [was] designed to fit the disabled man for new employment, his injury preventing his return to his former occupation.

Section 3 also provided for “job-improvement instruction, and . . . [was] intended primarily for men with minor disabilities who . . . [were] not prevented by their injuries from returning to gainful occupations” (Munroe, 1918, p. 8).

### **Problems**

In practical terms, the Federal Board encountered a number of problems ranging from its inability to adequately coordinate with the Bureau of War Risk Insurance to the motivation of veterans to complete the program in the face of general economic problems in the economy.

### **Coordination**

Initially, the Federal Board for Vocational Education could not provide the needed rehabilitative training until the Bureau of War Risk Insurance had determined the disability was service connected and serious enough that compensation had been awarded. Given the backlog of cases at the bureau, it could not act, and discharged veterans were left without training or compensation to provide for their needs.<sup>71</sup> Moreover, the bureau and the Federal Board for Vocational Education were often working at cross purposes based on two different sets of standards. The Bureau of War Risk Insurance had to “consider the man’s life-long status, while the federal board needed to look only at this immediate eligibility for training” (Wilson, 1920, p. 265). Given the backlog of

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<sup>71</sup> According to Wilson, 1920, p. 264, the federal board

enlisted the cooperation of the Benevolent and Protective Order of the Elks in proving funds to tide disabled men over until their compensability should be determined; and it established so-called “receiving stations” into which it took penniless disabled boys and supported them on the ground that they needed observation and preliminary training before their real vocational education could be begun.



cases and the bottleneck that the bureau had become, Congress amended the law on July 11, 1919, to authorize the board to provide vocational training, with full support and maintenance, to honorably discharged veterans who had “incurred, increased, or aggravated” a disability and could be placed in a rehabilitated program that would result in “suitable and gainful employment” (Munroe, 1918, pp. 8–9).

### ***Motivating Veterans***

As the Federal Board for Vocational Education moved veterans into training, other problems became apparent. By one account,

50% of the veterans engaged in rehabilitation training were reluctant to complete training . . . [because] Government allowances would stop and they would face the prospect of either no job at all or one at a level of pay below the allowances. Schools that benefited from prolonged training and extension of tuition payments frequently would not recommend discontinuance of instruction. (Obermann, 1965, p. 168)

### ***Caring for Veterans with Special Needs***

The various disabilities placed different demands on the board, which reported that

the blind . . . represent a particularly difficult training problem, although fortunately, they constitute a relatively small group, 308 cases up to September 1920.<sup>72</sup> This is also true of the deaf, with only 357 cases reported by the end of 1920.<sup>73</sup> There are about 5,000 amputation cases. . . . A much larger problem, however, has been found in providing for the large number of ex-service men who contracted tuberculosis in the service or as an effect traceable to service, and for the very large group of men suffering from mental and nervous diseases, for a large percentage of whom, because of their physical and mental condition, training is not feasible. (Wilson, 1920, p. 273)<sup>74</sup>

In some cases, those eligible for training were still hospitalized, especially those who had contracted tuberculosis and were in a USPHS sanatorium. The board established training centers at the hospitals.<sup>75</sup>

<sup>72</sup> Wilson, 1920, pp. 392–399, discusses treatment of the blind.

<sup>73</sup> Wilson, 1920, pp. 385–392, discusses treatment of the hearing and speech disabled.

<sup>74</sup> The federal board also noted that the mental and nervous disease cases, while numerous, “do not represent in the popular imagination spectacular cases, such as the blinded and those who have suffered amputations; but in reality all the resources that the Board can command are and will be taxed to handle them wisely” (Wilson, 1920, p. 273). “The rehabilitation problems presented by nervous and mental cases dwarf any other training problem that confronts the Board, both in size and difficulty” (Wilson, 1920, p. 285).

<sup>75</sup> The issue of training at hospitals is discussed in Wilson, 1920, p. 418. By September 1920, 27 training centers had been established at USPHS hospitals, and these served almost 1,557 trainees. The federal board expected the

### **Rehabilitation for Amputees**

In the case of amputees, the Federal Board for Vocational Education's tack broke sharply away from how other countries provided services. As noted in its *Fourth Annual Report to Congress* (1920), the board put

very little reliance . . . upon mechanical devices or special tools or machinery in overcoming the handicap of amputation. Experience in foreign countries . . . demonstrates that most men will not permanently rely upon such devices, which are constantly getting out of order and interrupt employment. In general, [they argued] it is better to seek an employment objective and train the man for one in which special devices are not required. (Wilson, 1920, p. 285)

All told, the Bureau of War Risk Insurance identified 4,976 amputees, of whom 2,994 entered training.<sup>76</sup> Of the latter group, 39 percent were trained "in line with [their] previous occupation," and 61 percent learned a new occupation (Wilson, 1920, p. 444).

### **The New Program Needed to Be Changed**

The new arrangement for providing services to veterans had problems from the start. Not only were the services promised veterans very ambitious, but also the administrative arrangements, which involved three separate organizations, were an invitation to failure. The rapidity with which the war ended and the quick pace of demobilization immediately burdened an administrative system that was totally unprepared, and veterans complained loudly to Congress.<sup>77</sup> Between 1918 and 1921, when responsibility for vocational rehabilitation was turned over to the newly created Veterans' Bureau, the Rehabilitation Division processed claims from 393,725 veterans for some form of vocational training. They found that two-thirds had a disability sufficient to warrant some form of training. Figure 7.4 shows the extent of the program. At the time of the transfer of responsibilities to the Veterans' Bureau, 87,848 veterans were still enrolled in training at schools the board had created or in some other institution under contract

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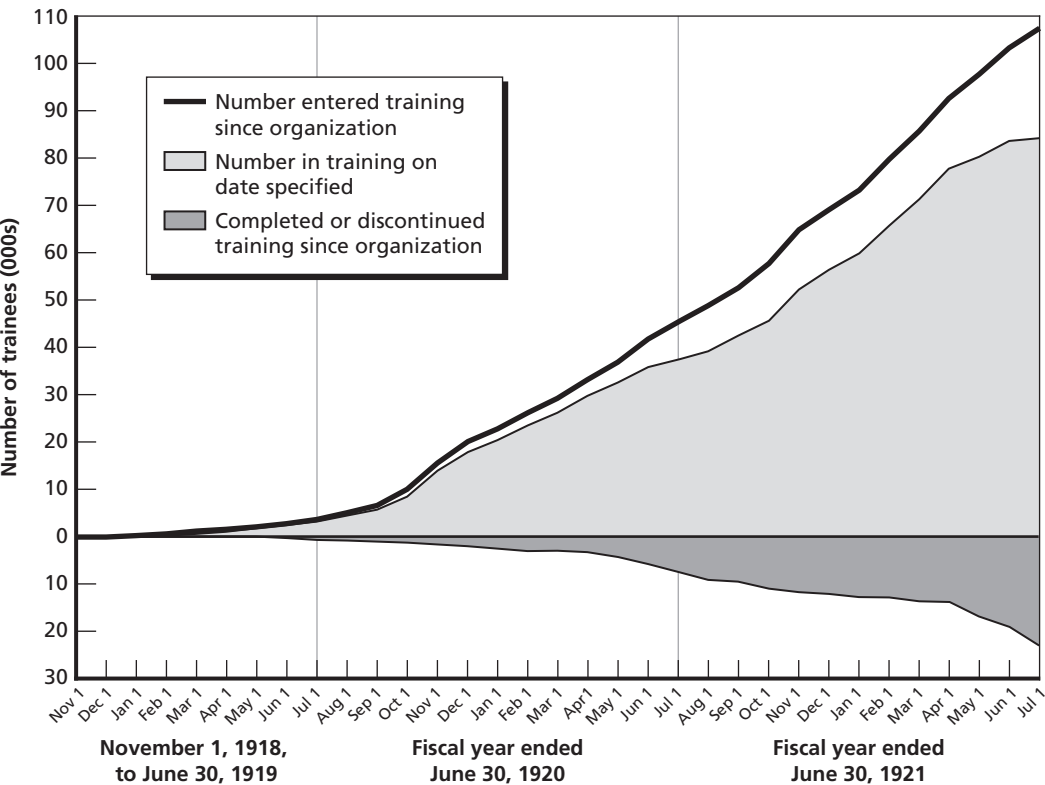
demand to grow to "at least 1,500 teachers, who in turn will care for approximately 20,000 students in hospitals, private sanatoria, and national sanatoria" (Wilson, 1920, p. 421).

<sup>76</sup> Interestingly, while the federal board had registered 4,976 amputees by June 30, 1920, the Army reported evacuating 2,801 between April 1, 1918, and June 30, 1919, during the redeployment back to the United States. This is a discrepancy of 2,175. The Army accounts for only 43 percent of the amputees registered with the federal board (Weed, 1923, pp. 176–177). It should be noted, however, that less than 50 percent of the Army was sent to France, and at least some of the remaining amputees may have been injured during training or other accidents in the United States.

<sup>77</sup> Obermann's description of the system in 1919 stills holds today:

Individual veterans, who believed that their applications or their rehabilitation program had not been expeditiously or fairly handled, had learned that they could write their politically sensitive Congressional representative with good effect. They learned that veterans' organizations, such as the American Legion and the Veterans of Foreign Wars, were interested, active, and influential. (Obermann, 1965, pp. 161–162)

**Figure 7.4**  
**Federal Board for Vocational Education: Rehabilitation of Disabled Soldiers, Sailors, and Marines, November 1918 to July 1921**



SOURCES: Adapted from Davis, 1921, p. 350.  
RAND MG1164-7.4

to the board.<sup>78</sup> In December 1919, the American Legion, one of the largest of the new veterans' service organizations, recommended that the three organizations be combined into a single, unified agency:

It was believed that lack of coordination due to dispersed authority and responsibility was the basic cause of program ineffectiveness; that only by bringing into a unified bureau the various scattered government agencies dealing with veterans' benefits could the services to veterans be well administered. (Obermann, 1965, p. 162)

<sup>78</sup> The board established 45 schools at USPHS hospitals, the national soldiers' homes, local hospitals, private sanatoria, and stand-alone training centers. On June 30, 1921, the board controlled 183 centers; had an enrollment of 12,315; and had 818 staff members (Davis, 1921, p. 362).

Veterans soon learned, however, that a mere change in administrative arrangements was no panacea.

## **The Rise of the American Legion**

The veterans' group known as the Grand Army of the Republic carried the banner of veterans' rights and benefits after the Civil War. It took only four months after the Armistice for a group of World War I veterans to organize the first American Legion post in Washington, D.C. In less than a year, almost one-fifth of all World War I veterans were members. Given the organization's size and the prominence of its leaders, Congress granted the American Legion a national charter in September 1919, and the War Department gave official recognition permitting the legion to assist members with their claims. It soon became the dominant veterans' organization and a formidable lobbying force and was instrumental in the passage of the Sweet Act in 1921, which created the Veterans' Bureau, and in pressing for a retroactive increase in wartime pay and for a future bonus—the beginning of a pension movement similar to the one that had been enacted in 1890 for Union veterans of the Civil War.

## **A New Beginning: The Veterans' Bureau**

Shortly after coming to office in 1921, President Warren G. Harding appointed two groups to look at the way services were being provided to veterans. One group, headed by Dr. William White, reported to Secretary of the Treasury Andrew Mellon on the need for a new hospital organization to handle veterans' affairs. The new organization they recommended would merge certain functions of the Bureau of War Risk Insurance, the Rehabilitation Division of the Federal Board for Vocational Rehabilitation, and the hospitals of the USPHS. The second group, appointed by President Harding and chaired by General Charles Dawes, was to "study and report on the conditions" of government programs dealing with veterans of the World War, and "propose a program for immediate needs . . . [and] future requirements" (Adkins, 1967, p. 110). The Dawes Committee reported that

[i]t cannot be too strongly emphasized that the present deplorable failure on the part of the government to properly care for the disabled veterans is due in large part to an imperfect organization of government effort. There is no one in control of the whole situation. (as reported in Vogel, 1994, p. 19)

The committee recommended that the President support the consolidation proposed by the White Committee. Five months later, on August 9, 1921, President

Harding signed the law establishing the Veterans' Bureau as an independent agency reporting directly to the President.

The task of putting three government agencies together and building an effective and efficient veterans' program was formidable. The initial efforts, under the leadership of Colonel Charles Forbes, failed to improve the level of services to veterans.<sup>79</sup> Real progress did not start until March 1923, when General Frank Hines was appointed director. He served in that post, and the successor post of VA administrator,<sup>80</sup> until August 1945. On June 7, 1924, Congress passed the War Veterans Act of 1924, which allowed Hines to close out the World War I veterans' vocational rehabilitation program. The law established a cutoff date of June 30, 1923, for application for vocational training; by 1928, the program originally started by the Federal Board for Vocational Education was over.

## Veterans' Programs Between the World Wars

In 1921, Congress authorized "the hospitalization of Spanish-American War veterans without reference to the origin or cause of the disability" (Adkins, 1967, p. 132). A similar change for World War I veterans came with the passage of World War Veterans Act of 1924, which substantially expanded veterans' access to the hospitals of the Veterans' Bureau.<sup>81</sup>

### Extending Care to Veterans with Non-Service-Connected Disabilities

In late November 1923, President Calvin Coolidge recommended to Congress that

all hospitals [of the Veterans' Bureau] be authorized at once to receive and care for, without hospital pay, the veterans of all wars needing such care, whenever there are

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<sup>79</sup> One area of progress, however, was the establishment of a new hospital program. Four new hospitals were authorized, and 15 other capital projects were begun, mainly to house veterans suffering from tuberculosis and mental disease. Unfortunately, the first director of the Veterans' Bureau, Colonel Charles Forbes, was eventually indicted on charges of "conspiracy to defraud the Government in contracts for veterans' hospitals . . . [and was] sentenced to prison and fined" (Adkins, 1967, pp. 117, 129).

<sup>80</sup> In 1930, the Veterans' Bureau was joined with the National Homes for Disabled Volunteer Soldiers and the Bureau of Pensions to form the VA (Adkins, 1967, p. 143).

<sup>81</sup> The 1924 act provided that

hospital facilities . . . shall be available to . . . every honorably discharged veteran of the Spanish-American War, the Philippine Insurrection, the Boxer rebellion, or the World War suffering from neuropsychiatric or tubercular ailment, . . . or loss of sight of both eyes regardless whether such ailments or diseases are due to military service. [In addition,] the Director is further authorized . . . [if] existing Government facilities permit, to furnish hospitalization . . . to veterans of any war, military occupation, or military expedition since 1897, not dishonorably discharged without regard to the nature or origin of their disability.

Preference was given to "veterans who are financially unable to pay for hospitalization" (World War Veterans Act of 1924, p. 621).

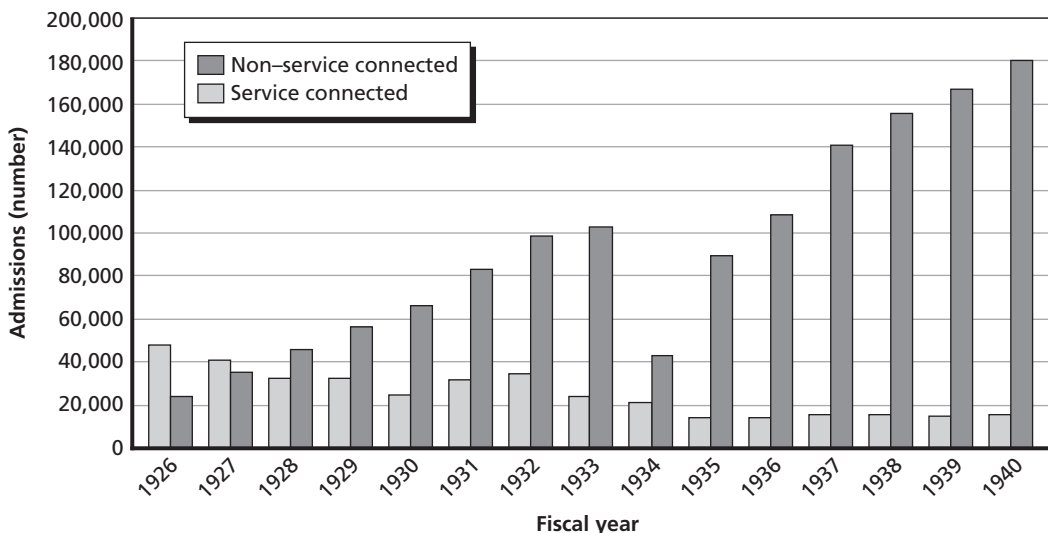
vacant beds, and that immediate steps be taken to enlarge and build new hospitals to serve all such cases. (Coolidge, 1923)

At the time, government hospitals had 9,500 vacant beds, and General Hines thought that “not too many veterans would take advantage of this” expanded benefit (Adkins, 1967, pp. 131–132). He was wrong. The new law had a profound effect on the size and character of veterans’ care in the United States. Figure 7.5 shows the changing mix of service and non–service-connected admissions at veterans’ hospitals between 1926 and 1940. Service-connected admissions dropped from 48,166 in 1926 to about 15,000 by the end of the 1930s. Non–service-connected admissions rose from 24,196 in 1926 to over 180,000 in 1940. The change that Hines thought few would “take advantage of” would account for 92 percent of all admissions in 1940; compared to 1926, admissions would grow by 270 percent.

### Establishment of the Veterans Administration

In 1930, as the country moved into the Great Depression, the Veterans’ Bureau joined with the National Homes for Disabled Volunteer Soldiers and the Bureau of Pensions to form the VA. The Depression was a difficult time for most Americans, and veterans were no exception. In 1917, a future senator, Paul Douglas, wrote of his hope that the more generous provisions of the War Risk Insurance program for World War I veterans might “remove the necessity and should remove the possibility of both disability and service-pension legislation” (Douglas, 1918, p. 481). By 1920, it was a clear that

**Figure 7.5**  
**Patients Admitted for Hospital Treatment or Domiciliary Care, by Fiscal Year**



SOURCES: Annual Reports of the Veterans’ Bureau and the VA, 1926–1940.

RAND MG1164-7.5



Douglas's hope would not become a reality as veterans' organizations pushed for a "bonus" payment set at \$1 per day for domestic service and \$1.25 per day for overseas service. In 1924, Congress passed the Bonus Bill over President Coolidge's veto.<sup>82</sup> Claims in excess of \$50 were issued an adjusted service certificate that was to be paid in 1945. During the Depression, in 1931, Congress overrode President Herbert Hoover's veto and allowed veterans to borrow up to 50 percent of their "bonus" from the Treasury. The following year, a group of unemployed veterans calling themselves the Bonus Expeditionary Force marched on Washington, D.C., in a futile effort to force a full, lump-sum payment. The Army, under the direct command of its chief of staff, General Douglas MacArthur, forcefully ejected the marchers from the nation's capital. Payments were, however, accelerated, and almost all had been made by the end of June 1937.

During the Depression, the VA grew, largely because of the extended coverage for non-service-connected disabilities. Initially, the Roosevelt administration severely cut back on veterans' programs under the terms of the Economy Act. In a speech before the American Legion convention in October 1933, Roosevelt took the position that "the mere wearing of a uniform in the war does not entitle a veteran to a pension from his government for a disability incurred after his period of service has ended" (as quoted in Wallerstein, 1976, p. 177). For the first time since 1820, the government revoked benefits for veterans. The new act erased all laws dealing with medical and hospital treatment, domiciliary care, compensation, and pensions to veterans and their dependents of all wars starting with the Spanish-American War and replaced them with an entirely new, much less liberal, system of veterans' benefits (Adkins, 1967, p. 153). For example, service pensions for Spanish-American War veterans younger than age 55 were eliminated (see Wallerstein, 1976, p. 177).

In a move reminiscent of the Elizabethan Privy Council of 1593, President Roosevelt took the radical position that state and local governments should have primary responsibility for the care of veterans whose disabilities were not connected to their military service. Veterans' groups, led by the American Legion, opposed this view. On March 29, 1934, Congress overrode the President's veto and restored almost all the benefits it had curtailed the previous year.<sup>83</sup> This included access to VA facilities for veterans whose needs and disabilities were not connected to their military service.

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<sup>82</sup> Ortiz, 2010, Ch. 1, notes: "The Republican presidents of the 1920s and FDR viewed an expansive veterans' welfare system suspiciously, seeing it as a continued pocket of governmental waste and corruption and as contrary to the tenets of fiscal conservatism that they held dear. But, despite this, Congress continually voted to liberalize veterans' benefits and pensions, more often than not over presidential vetoes."

<sup>83</sup> The drop in admissions in 1934 shown in Figure 7.2 is the result of the Economy Act:

The admissions for this year represent a decrease of more than 53 percent in the number for 1933 and is the lowest number recorded since 1920. The material decrease in admissions for this year is due to the legislation of March 20, 1933, and the Presidential regulations issued there under which denied hospitalization to veterans with non-service-connected disabilities of a temporary nature, operations of choice, etc., which conditions

Administrator Hines thought that opening up the VA to veterans with non-service-connected disabilities, especially for indigents, was his greatest accomplishment. It was certainly the primary reason that the population the VA served increased throughout the 1930s. Not only did the size of the VA increase but also the nature of its patients changed. Over time, as shown in Table 7.8, the proportion of patients with disabilities that were not connected to their military service increased, and the VA increasingly dealt with patients suffering some form of neuropsychiatric disorder.

During the 1930s, Congress authorized the VA to build only enough hospital beds to meet the needs of neuropsychiatric and tuberculosis patients; veterans with other non-service-connected disabilities were to be served only to the extent that existing VA facilities could accommodate them (Adkins, 1967, p. 157). Yet, accommodate them they did. Between 1931 and 1941, the number of VA hospitals rose from 64 to 91, and bed capacity increased from 33,669 to 61,849 (Adkins, 1967, p. 149). Unfortunately, with the shift in the kinds of care the VA provided, the VA began to appear to be a warehouse for the mentally and medically ill and indigent and a backwater of the medical profession. Even the medical director of the VA was not satisfied with the quality of doctors being recruited for the VA. He apparently thought that “their backgrounds . . . were often not impressive enough to qualify them for the care of veterans” (Adkins, 1967, p. 149). It was common for the best physicians to “resign . . . for more exciting and more lucrative practices elsewhere” (Adkins, 1967, p. 149).

The Legacy

On all fronts, World War I marked a turning point in the way the nation treated veterans. First, those requiring care were different from the veterans of previous wars. Compared with the Civil War, far fewer soldiers died from disease; there were fewer

**Table 7.8**  
**Veterans Hospitalized for Non-Service-Connected Disabilities**  
**at the End of Select Fiscal Years (percent)**

Fiscal Year	Pulmonary Tuberculosis	Neuropsychiatric	General Medical and Surgical
1925	9.64	9.70	33.13
1930	51.31	25.71	77.30
1935	75.28	59.01	91.47
1940	82.39	67.79	95.43

SOURCE: Hines, 1941.

were largely responsible for the rapid turnover and greatly increased admission rate during recent years. (Hines, 1935, p. 11)

amputations; and the survival rate was dramatically higher. A new class of war casualties started to appear in appreciable numbers with an enlightened understanding of human psychology. Whether the illnesses uncovered were a product of this war or whether their diagnoses were the result of better understanding of how humans react to traumatic conflict is open to debate. What cannot be debated is the increasing importance, during and after World War I, of neuropsychiatric casualties. Building on the experience of the allies before the United States entered the war, the American program built on the concept of echelons of care employing the principals of proximity, immediacy, expectancy, simplicity, labeling, and centrality (Jones, 2000, pp. 3–5).

Care for veterans evolved from what amounted to custodial care into a commitment to rehabilitation. Between 1918, when the war ended, and 1928, when the last veterans completed training, the numbers of veterans who took part in what one commentator called an “impressive experiment” were truly impressive. Almost one-half of all World War I veterans applied for some form of rehabilitative training after the war. About 330,000 were found eligible, and about 130,000 satisfactorily completed training, with 98 percent of them finding training-related employment. Moreover, the support these programs had from the American people provided a firm base on which the veterans’ programs of World War II would be built. By 1930, a single consolidated veterans’ agency, the Veterans Administration, emerged providing care for both service- and non-service-connected disabilities. At the onset of World War II, however, it was unprepared for the new flood of veterans that were soon to arrive.

## World War II

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In the 43 years between the start of the Spanish-American War and the start of World War II, the United States evolved, albeit reluctantly, from a largely isolated regional power into a world power. The congressional decision to reject the League of Nations in 1920 was one sign of this reluctance, as was the relatively small growth of the U.S. military after World War I relative to its prewar levels.<sup>1</sup> Active military strength remained relatively stable, at about 250,000, from 1920 until the nation started to prepare for war after the fall of France in 1940.<sup>2</sup> Figure 8.1 shows the buildup for World War I, which started in 1916; the interwar period; and the rapid buildup during World War II. It visually compares the tasks the Army faced in 1916 and in December 1941, when the debate about entanglements in overseas conflicts ended abruptly with the Japanese attack on Pearl Harbor. During World War II, 16.1 million Americans served in the armed forces. At the war's peak, approximately 19 percent of the nation's total male population, and 61 percent of the males in the primary age group of 18 through 36, were in uniform. The average length of time on active duty was 33 months; 73 percent of those on active duty were overseas for an average of 16 months (Bureau of the Census, 2009, Table 523). While these numbers are impressive in themselves, the greater achievement was arguably that of the small cadre of Regular Army and

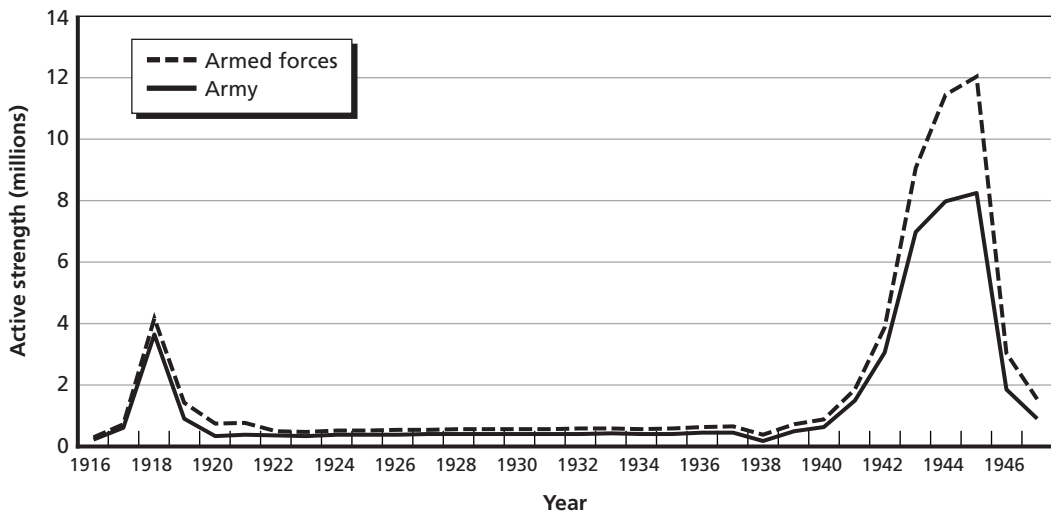
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<sup>1</sup> This discussion of World War II focuses on the Army. The Navy's Bureau of Medicine and Surgery was one-tenth the size of the Army Medical Department, and as Cowdrey, 1994, p. 95, notes, the Navy Surgeon General, Rear Admiral Ross T. McIntire, "held an unchallenged position and ran a tight ship," which was in sharp contrast with the often dysfunctional way the Army medical program was run:

Comparing the size of the U.S. military in the decades before and after a major conflict, the U.S. military after the Civil War stabilized at 210 percent of its prewar strength. After the Spanish-American War, and with a worldwide "empire" to administer, the U.S. Army stabilized at 270 percent of its prewar strength. After World War I, the Army stabilized at 180 percent of its prewar strength. The armed forces of Britain and France, while still larger than those of the United States, actually shrank after World War I by one-third. In 1913, the British armed forces numbered 533,000. Between 1922 and 1939, when Britain mobilized for World War II, its military averaged only 357,000. In 1913, the French military numbered 789,000; between 1922 and 1939, it averaged 526,000.

<sup>2</sup> According to Marshall, 1966, pp. 3 and 24, "In 1939, the active Army of the United States consisted of approximately 174,000 enlisted men scattered over 130 posts, camps, and stations. . . . The authorized commissioned strength of the Regular Army . . . was 13,637."

**Figure 8.1**  
**Growth of the Armed Forces, 1916–1947**



SOURCE: Grieg and Enterline, 2008.

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National Guard officers who took the millions of draftees and officer candidate school graduates and melded them into an effective fighting force (Mansoor, 1999).

## The American Soldier of World War II

Unlike any other war in the history of the United States, it is impossible to tell the story of the typical American soldier of World War II because the war was fought on so many fronts. Regardless of where he fought, the one constant was the soldier himself: the American GI. The World War II army was made up almost entirely of men who grew up during the years of the Great Depression of the 1930s and then were drafted into service after the fall of France in June 1940. That summer, with the broadcasts of radio correspondent Edward R. Murrow bringing the sounds of the German blitz against London into the living rooms of America,<sup>3</sup> President Franklin D. Roosevelt called the nation to prepare for war. On September 16, 1940, the President signed the Selective Training and Service Act of 1940, the first peacetime conscription law in the history of the United States.<sup>4</sup> One month later, on October 16, 1940, all men between

<sup>3</sup> According to Seib, 2006, p. 7, 83 percent of U.S. households (more than 29 million out of a total 35 million) had radios by 1940.

<sup>4</sup> In total, between December 1, 1941 and December 31, 1946, 36,677,000 registered for the draft, with 10,022,000 actually being drafted, as reported in Bureau of the Census, 2009, Table 523. Previously, some 17.3 million men had been registered in two waves between October 20, 1940 and September 30, 1941, of which 922,000 were inducted, as noted in Hershey, 1942, pp. 392, 247.

the ages of 21 and 36 registered with the Selective Service.<sup>5</sup> A national lottery was held on October 1, 1940, to establish the order of call (Flynn, 1993, p. 22). On November 8, 1940, Roosevelt ordered that 800,000 men be selected and inducted by July 1, 1941 (Hershey, 1942, p. 27). The prescribed period of active service was one year, to be followed by ten years in the reserves. On June 28, 1941, the President ordered that, during FY 1942, an additional 900,000 men would be “selected and inducted.” On August 19, 1941, Congress passed the Service Extension Act of 1941, extending the period of service to 18 months, by only one vote in the House of Representatives. Congress also reduced the maximum draft age to 28, allowing some 193,000 to leave service before completing their training. When war eventually came, the draft age was extended to 36, with inductions made on an oldest-first basis, then moving down. However, not everyone eligible to be drafted was inducted, as Stephen Ambrose, 1994, p. 48, noted in his history of D-Day:

The American Selective Service System was just that, selective. One-third of the men called to service were rejected, after physical [and mental] examinations, making the average draftee brighter, healthier, and better educated than the average American. [On average] he was twenty-six years old, five feet eight inches tall, weighed 144 pounds, had a thirty-three-and-a-half-inch chest, and a thirty-one-inch waist. After thirteen weeks of basic training, he had gained seven pounds and converted many of his original pounds from fat to muscle and added at least an inch to his chest. Nearly half the draftees were high-school graduates; one in ten had some college. . . . These were the best-educated enlisted men of any army in history.

American troops of World War II were equipped with the new M-1 Garand rifle; a weapon General George S. Patton, Jr., proclaimed, “the greatest single battle implement ever devised by man” (Taylor, 1982). The M-1 was a semiautomatic rifle loaded by inserting a metal clip containing eight rounds that fired one round each time the trigger was pulled. It replaced the single-shot bolt action Springfield rifle of World War I and was the first semiautomatic rifle to be widely issued to the infantry of any nation. The M-1 gave the American GI a significant advantage in firepower and shot-to-shot recovery time over the enemy soldiers he faced on battlefields all over the world.

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<sup>5</sup> The Selective Service model was first introduced during the World War I draft. Deferments were provided for government officials and for those “employed in industry, agriculture or other occupations or employments” that were “necessary to the maintenance of the public health, interest and safety” (Hershey, 1942, p. 35). The law prohibited deferments for “individuals by occupational groups or of groups of individuals in any plant or institutions” (Hershey, 1942, p. 37). For the most part, however, draftees were initially inducted for the duration of the war plus six months, and most of those assigned overseas did not have the opportunity to return home until the end of the war. The original “duration plus six months” notwithstanding, service members were mustered out at the end of the war based on age and points earned for service, which were heavily weighted for combat, overseas service, and paternity.



To go with the new rifle, there were new infantry tactics that stressed firepower and maneuverability.<sup>6</sup> Gone were the battle-line tactics of the Revolution and the Civil War. Gone were the trench warfare and infantry charges of World War I. In World War II, combined arms were stressed, with infantry working together with tanks, aircraft, and artillery. New paratroop divisions were formed of elite troops who could be dropped behind enemy lines.<sup>7</sup>

For the average soldier, the focus was on small-unit offensive infantry actions at the squad and platoon levels and centered on engagements and assaults on fortified positions. In both cases, the emphasis was on achieving fire superiority and maneuvering to find a vulnerable spot. The wide use of trucks, first seen in World War I, and half-tracks meant that soldiers no longer had to walk long distances. Moreover, now the battle could also be brought to foreign shores with amphibious capabilities that included specially designed landing craft.<sup>8</sup>

After the initial defeats of American forces in the Philippines and on a handful of Pacific Islands, American forces were generally on the offensive. From the island-hopping campaign in the Pacific (start of Guadalcanal on August 17, 1942) to Operation Torch in North Africa (November 8, 1942) and on to D-Day on the Normandy beaches (June 6, 1944), American forces primarily attacked prepared positions or fixed fortifications, such as the Mareth Line in Tunisia, the Winter Line in Italy, the Atlantic Wall in France, and the West Wall on the western borders of Germany. Ambrose, 1994, p. 52, noted that, while the “Germans never did manage to hold a position—they were always driven back, . . . the kill ratio . . . was almost two-to-one in favor of the Wehrmacht vs. the Anglo-American armies.”<sup>9</sup> As a result, for the American Army,

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<sup>6</sup> On firepower, Mansoor, 1999, p. 257, notes:

One enormous advantage that American divisions had in combat was their vastly superior fire support, made possible by the advances in fire support coordination and techniques during the interwar period. American artillery was the best in the world by the time the army entered into combat overseas. Tooled with new, more powerful, more mobile weapons, and directed through a combination of radio-equipped forward observers and fire direction centers, American artillery had the ability to mass fire on the enemy that impressed both friend and foe alike.

<sup>7</sup> The Germans had pioneered paratroop units but “gave up on airborne operations after suffering disastrous losses in the 1941 capture of Crete” (Ambrose, 1994, p. 47).

<sup>8</sup> Stephen Ambrose explained that, by war’s end,

Higgins Industries had produced over 20,000 LCVs [Landing Craft, Vehicle, Personnel]. They were dubbed “Higgins boats” and they carried infantry ashore in the Mediterranean, in France, at Iwo Jima and Okinawa, and at other islands. More American fighting men went ashore in Higgins boats than in all other types of landing craft combined. . . . Together with the LCTs [Landing Craft Tank] and other craft, they gave the Allies unprecedented mobility. (Ambrose, 1994, p. 46)

<sup>9</sup> Mansoor, 1999, pp. 4–6, suggests that the popular notions that American forces were, in Martin Van Creveld’s words, “less than mediocre” and that a superior German army was simply overwhelmed by America’s industrial might are demonstrably wrong. Mansoor argued that

American army strength lay in its ability to adapt to changing conditions on the battlefield across the globe, its use of intelligence, outstanding fire support, the ability to execute joint operations, and most importantly,

the prevalence of wounds from artillery shells was much higher in World War II than it had been in World War I.<sup>10</sup> For this truly global war, the American medical establishment required a new way of doing business; decentralization was the guiding principle for the organization of military medicine in World War II.

## Organizing the Army Medical Department for a New War

On the eve of the start of World War II in Europe (June 1939), the Surgeon General of the Army, as head of the Army Medical Department, had direct command over most of the Army's medical establishment. The 9,359 officers and men he commanded operated seven general and 119 station hospitals in the United States, Hawaii, the Philippines, and the Panama Canal Zone (Smith, 1956, p. 3). This team was geared to serve a garrison army of nearly 190,000. The Army, however, had only five medical tactical units that could be called on to care for troops in combat. There were four medical regiments and one medical squadron, with two of the regiments stationed overseas. After the invasion of Poland in the fall of 1939, and as part of the Protective Mobilization Plan of 1939, the Surgeon General was authorized to establish "affiliated units" at "large and well-staffed civilian hospitals" (Wiltse, 1963, p. 141). Following the model that had been used to organize such units before World War I, special rules were established for the appointment and promotion of reserve officers in these units based on their qualifications and the position to be filled. By October 1941, 41 general hospitals, 11 evacuation hospitals, and four surgical hospitals had been organized (Wiltse, 1963, p. 144). Conspicuously, these hospitals were not equipped to care for any neuropsychiatric casualties; at the time, the Army thought it could screen out such problems.

The Surgeon General not only headed the Medical Department, he also headed an element of the War Department's Special Staff. On paper, this gave the Surgeon General direct access to the Chief of Staff. In practice, however, the system was fragmented and dysfunctional. Any measures that the Surgeon General wanted to put into effect throughout the Army had to clear through one or more of the five divisions of the General Staff. Most measures called for the concurrence of G-1, Personnel, or G-4, Supply, or both. Not only was G-4 responsible for Army supplies, he prepared plans

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its endurance. . . . American commanders in Europe rarely possessed the numerical superiority the revisionists claim overwhelmed the Wehrmacht in 1944 and 1945 . . . . Instead, American leaders used the personnel and logistical systems they created to keep a relatively small number of divisions at a relatively high state of combat effectiveness.

<sup>10</sup> In World War I, 22.4 percent of all wounds were caused by artillery (Love, 1925, pp. 1019–1021). In World War II, artillery accounted for 58.5 percent of wounds in the Mediterranean Theater between January and June 1944 (Beebe and DeBakey, 1952, p. 131) and 60.2 percent after D-Day and during the final assault on Germany (Beebe and DeBakey, 1952, p. 129). Beebe and DeBakey, 1952, p. 131, reports that artillery was less a factor in the Pacific, with the death rate from bullets being almost twice the rate as in the Mediterranean Theater and three times the rate of forces engaged in France or Germany.

and policies for, and supervised, the evacuation of troops to hospitals. In wartime, the War Plans Division was also responsible for formulating plans for deploying troops to the various theaters of operation.<sup>11</sup>

### **Mobilization**

In September 1939, when President Roosevelt proclaimed a limited national emergency, the Army Medical Department served nearly 190,000 officers and men.<sup>12</sup> At its peak in June 1945, the Army had grown to a force of 8,266,373. The eventual size of the Army medical establishment for World War II was staggering, as shown in Table 8.1. Of particular note was the growth in areas other than the Medical Corps, including such new areas as dietitians, physical therapists, and pharmacists. The growth in the number of Army nurses was twice that of the growth in the Medical Corps.<sup>13</sup> One of the most profound changes was the increase in the Medical Administrative Corps from a prewar level of 64 officers to 19,893 in July 1945. By one account, “World War II brought about the permanent transformation of the Army Medical Department into a complex health care organization, led by physicians but incorporating people of many other talents as well” (Cowdrey, 1994, p. 105).

### **The Reorganization of March 1942**

By mid-1941, approximately 60 agencies were reporting directly to the Chief of Staff of the Army, General George C. Marshall, creating management problems and administrative bottlenecks potentially as monumental as those that had developed in 1917. General Marshall’s role as general manager of the department was interfering with his duties as the President’s adviser on military strategy and operations. He decided

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<sup>11</sup> The Surgeon General also had a special relationship with the Air Corps. According to the Army’s official history:

During the period between World Wars I and II, Air Corps theory favoring an air force separate from the Army was reflected in the relations between the Office of the Surgeon General and the Medical Corps officers assigned to the Air Corps. The latter sporadically exhibited some tendency to pull away from the jurisdiction of the Surgeon General, insisting from time to time on the special characteristics of Air Corps medical service. (Armfield, 1963, p. 8).

<sup>12</sup> It is important to note that the mobilization took place within a system of segregation of the races. Stephen Ambrose (1997, pp. 345–346) wrote that the

world’s greatest democracy fought the world’s greatest racist with a segregated Army. It was worse than that: the Army and the society conspired to degrade African-Americans in every way possible, summed up in the name Jim Crow. . . . Old Jim Crow ruled in the Army as much as in the South. Blacks had their own units, mess halls, barracks, bars—State-side, England, France, Belgium, it didn’t matter. There were no black infantry units in ETO [the European Theater of Operations]. There were nine Negro field artillery battalions, a few anti-aircraft battalions, and a half dozen tank and tank destroyer battalions. Some did well, some were average, some were poor.

<sup>13</sup> The demand for trained nurses trumped racial barriers. The Cadet Nurse Corps was established in 1943, and both black and white women, along with a very few Native American women, entered the nursing profession. There were even a few Japanese-American internees in the program. Over 115,000 Cadets were enrolled in both federal and non-federal hospitals. See Hine, 1989.

**Table 8.1**  
**Army Medical Department Staffing**

Milestones	Total Army Strength	Officers in the Medical Department		Medical Corps		Medical Administrative Corps		Army Nurses		Enlisted Men Medical Department	
		Strength	%	Strength	%	Strength	%	Strength	%	Strength	%
June 1939	188,565	2,181	1.16	1,098	0.58	64	0.03	672	0.36	9,359	4.96
June 1940	267,767	3,119	1.16	1,578	0.59	66	0.02	942	0.35	14,974	5.59
June 1941	1,460,998	20,238	1.39	10,311	0.71	1,108	0.08	5,433	0.37	98,369	6.73
December 1941	1,686,403	23,890	1.42	11,342	0.67	1,470	0.09	7,043	0.42	107,867	6.40
June 1942	3,074,184	43,755	1.42	17,954	0.58	1,891	0.06	16,013	0.52	198,089	6.44
June 1944	7,992,868	120,221	1.50	43,987	0.55	15,010	0.19	39,542	0.49	541,839	6.78
June 1945	8,266,373	142,616	1.73	46,600	0.56	19,893	0.24	54,291	0.66	521,282	6.31
Growth 1939–1945 (%)	4,384	6,539		4,244		31,083		8,079		5,570	

SOURCE: McMinin and Levin, 1963, pp. 10–15.

to substitute the vertical pattern of military command for the more businesslike horizontal pattern of bureaucratic coordination. This centralization of executive control would enable him to decentralize operating responsibilities. Instead of the General Staff and three score or more agencies having direct access to the Chief of Staff's office, Marshall's March 1942 reorganization created three field commands outside the formal structure of the Department of War: Army Ground Forces (AGF), Army Air Forces (AAF), and Army Service Forces (ASF), initially the Services of Supply. AGF, under Lieutenant General Lesley J. McNair and responsible for training the Army. AAF, were for practical purposes already functioning under Lieutenant General Henry H. Arnold. ASF, under Lieutenant General Brehon B. Somervell, was a new agency hastily thrown together to include the Army's supply system, administration, and "house-keeping" functions, to include medical support within the the contiguous 48 states of the continental United States—the Zone of the Interior (ZI). The War Plans Division (soon renamed the Operations Division) became General Marshall's command post. The rest of the General Staff, drastically reduced in numbers, was forced out of operations and confined in theory to a broad policy planning and coordination role.<sup>14</sup> At least for the duration of the war, the March 1942 reorganization not only improved the ability of the Army to wage war, it "demolished" the set-in-stone War Department bureaus that had governed the Army since the early 19th century. Needless to say, reorganization had a profound effect on the Medical Department.

### **Problems of "Status and Jurisdiction"**

The Army's history of the ASF understates the situation when it says, the "War Department reorganization brought with it serious problems of status and jurisdiction." (Millet, 1954, p. 39). For Surgeon General James Magee, it was a bureaucratic life-or-death struggle, with problems arising in a number of areas:

- First, access to the Chief of Staff of the Army. While formally still responsible for the health and medical care of the entire army, the Surgeon General no longer reported directly to the Chief of Staff.<sup>15</sup> Smith, 1956, p. 55, notes:

In his new position, the Surgeon General was an adviser to General Somervell. In this capacity the extent to which [the Surgeon General] could discharge what he considered to be his responsibilities depended primarily upon the degree to which General Somervell accepted his recommendations.

<sup>14</sup> Summarized from Hewes, 1975, pp. 67–69.

<sup>15</sup> This was true until early 1945, when a Department of War circular, while not removing the Surgeon General from ASF jurisdiction, reaffirmed his position as the chief medical officer of the Army. The circular officially authorized him to deal directly with the Chief of Staff and the General Staff, without interference from ASF headquarters, on "matters affecting the health of the Army" (Millet, 1954, p. 172). The Surgeon General was also authorized direct access to the Secretary of War.

- Second, control of medical plans and policies. The policies of the newly established Hospitalization and Evacuation Branch, under the Control Division of the ASF, brought the Surgeon General into open conflict with ASF headquarters, which took the position that it was their job to “lay down policies to the Surgeon General.” The Surgeon General took the position that “any medical officer in a staff position of a higher headquarters should be a representative of the Surgeon General and should receive his instructions and advice from the Surgeon General’s office” (Smith, 1956, p. 56).<sup>16</sup>
- Third, control of medical personnel and units deployed overseas. Under Marshall’s reorganization medical units normally used in combat zones in close support of ground troops should be assigned to the AGF and those normally used in communication zones—the area behind the front line required for administration of the theater—should belong to the ASF. Mindful of his position as chief medical officer of the Army, the Surgeon General wanted all hospital units—those that served in combat as well as in communication zones—and certain other medical units that normally served as parts of field armies, such as medical laboratories and depots, to be under his jurisdiction (Smith, 1956, p. 58). The final decision did not go in favor of the Surgeon General’s position. All combat zone units, including surgical and evacuation hospitals, as well as medical regiments, medical battalions, medical detachments, and medical supply depots became part of the AGF. The ASF was given responsibility for general, station, and hospital center units; certain evacuation units; and hospital trains and hospital ship companies. As a result, by September 1944, the office of the Chief Surgeon in the ETO, Major General Paul Hawley,<sup>17</sup> contained “151 officers, 362 enlisted men, and 125 civilians. It was by far the largest Army medical office overseas and second in size only to the Surgeon General’s Office itself.” (Armfield, 1963, p. 341).
- Fourth, control of medical units and facilities in the ZI. Starting in July 1942, the Army moved to decentralize many functions, including medical functions, to the nine regional corps areas, or as they would be later called, service commands, in the ZI. Up to this time, the chiefs of the various services in Washington, including the Surgeon General, controlled fiscal operations, the recruitment of civilian personnel, and some installations. General Somervell wanted to eliminate the “stovepiping” of activities and to eliminate functional duplication. He directed reorganization along function lines, with divisions handling training, personnel,

<sup>16</sup> In May 1942, acrimony reached the boiling point when the head of the Control Division “charged the Surgeon General with having failed to prepare hospitalization and evacuation plans either before or after he was so directed” (Millet, 1954, p. 64).

<sup>17</sup> After the war, General Hawley returned to the United States to become the Medical Director of the VA (Armfield, 1963, p. 370).



and supply. This placed the service command surgeon under the personnel or supply division of the service command. Armfield, 1963, p. 121, notes that the service command surgeons not only lost their staff position, they had no direct or official channel to the Surgeon General. As a result, the Surgeon General had to issue instructions on matters of policy in the name of the commanding general of ASF to the commanding general of the service command for the attention of the surgeon.<sup>18</sup> Another major change in medical organization took place in August 1942, when all general hospitals, except for Walter Reed, were transferred from the direct control of the Surgeon General to the commanding generals of each of the service commands. Hospitals at the ports of embarkation and debarkation were assigned to the Office of the Chief of Transportation.<sup>19</sup> The Surgeon General, however, retained the important function of allocating beds at the general hospitals and, until April 1943, control of the allotments of medical officers to general hospitals (Armfield, 1963, p. 122).

- Fifth, professional communication with Army medical officers. By subordinating the Surgeon General's Office to ASF headquarters, professional communication with the surgeons of overseas theaters became circuitous. The Surgeon General reverted to sending personal letters, which did not have to go through channels, to medical officers overseas. By mid-1943, however, the Surgeon General's Office started to receive essential technical medical data from the theaters, which for the first time gave them current information on the medical situation overseas (Armfield, 1963, p. 83).

### Contributions of the Medical Department

Despite the many problems he faced throughout the war, the Surgeon General was able to affect the way medicine was practiced. Professional decisions about medical care, so far as they could be separated from administrative action, remained the exclusive province of the Surgeon General throughout the war. For example, writing under the heading of ASF, the Surgeon General provided "broad policies and certain guid-

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<sup>18</sup> According to Smith, 1956, p. 60, "General Somervell and the commanding generals of service commands . . . [permitted] informal direct communication between the Surgeon General's Office and service command surgeons."

<sup>19</sup> For example, Armfield, 1963, pp. 142–143, notes how this worked at the ports of embarkation:

The port surgeons at Army ports of embarkation, directly responsible to port commanders, operated within this command channel which led back, through the Office of the Chief of Transportation, to Services of Supply headquarters in Washington. The port surgeon was in charge of medical care furnished at port dispensaries and the station hospital at the port, as well as on transports carrying troops to and from overseas areas.

The port surgeon was always under the technical guidance of the Office of the Surgeon General despite the fact that he was within the command channel of the Transportation Corps. In the early part of the war, no medical office existed in the Office of the Chief of Transportation in Washington. That office exercised somewhat more centralized control over the medical service at ports after spring 1943, . . . when the Surgeon General assigned a Medical Department officer to it as liaison officer.

ing principles on the care of the wounded in theaters of operation” (Surgeon General, 1943, p. 1). Most noteworthy was the role the Surgeon General and his staff played in the successful use of atabrine as a malarial suppressive; of the use of penicillin and sulfonamide compounds for a wide range of wounds and general infections; and the development of new insecticides, especially DDT. The Surgeon General insisted on immunizing every soldier against typhoid and paratyphoid fevers, smallpox, and tetanus, which kept the incidence of these diseases so low as to be almost insignificant. The extensive use of consultants, highly trained experts from civilian life, to supervise the professional and, in some cases, the administrative activities of the Medical Department was an important development of World War II, although it had its precedent in World War I. These experts were armed, as Millet, 1954, p. 94, notes, with the authority to work out the policies and standards of practice, which would give the Army the highest type of service in every branch of medicine.

In summer 1942, however, these advances lay in the future, and acrimony characterized the relationship between ASF headquarters and the Office of the Surgeon General.

### **Tension Between General Somervell and Surgeon General Magee**

Relations between the Army Surgeon General and the Chief of Staff of the Army were never good. Looking back, the Army’s history of the period notes: “Under (Surgeon) General Magee’s leadership, the Department exhibited certain conservative tendencies in hospital expansion and administration which sometimes irked those in higher positions of authority” (Smith, 1956, p. 53). In summer 1942, tensions came to a head, fueled by the public controversy over the procurement of medical manpower between the Surgeon General and the Office of Civilian Defense and the War Manpower Commission.<sup>20</sup> The Army claimed to need 61,000 doctors, or one doctor for every 6.7 service members, “an enormous proportion by civilian standards” (Cowdrey, 1994, p. 102). One reason for such a high number was that the Medical Department routinely assigned physicians to a wide range of administrative jobs. This practice clashed with the civilian view that physicians coming into the military “should be reserved

<sup>20</sup> For a review of the work of the War Manpower Commission, see Flynn, 1979. According to Armfield, 1963, p. 147, the

Manpower Commission became concerned over the removal of doctors from civilian life and complained of the aggressiveness of the Medical Officer Recruiting Boards working in the various service commands to get doctors into the Army. Higher officials of the War Department, including the Deputy Chief of Staff, were uncertain of the validity of estimates of Army requirements for doctors by the Surgeon General’s Office vis-à-vis differing estimates by the Procurement and Assignment Service and other government agencies interested primarily in protecting civilian medical interests. The Deputy Chief of Staff directed the Inspector General to investigate the assignments of medical officers within the Office of the Surgeon General (as well as assignments to the offices of some other chiefs of services), with a view to determining whether the number so assigned could be cut. This separate investigation of medical personnel in the Surgeon General’s Office went on concurrently with the general investigation of the Medical Department.

for clinical duties” (Cowdrey, 1994, p. 103) and, in their view, inflated the military’s requirement for physicians.

Echoing Secretary Stanton’s efforts to remove Surgeon General Hammond during the Civil War, General Somervell, backed by General Marshall, ordered an “investigation” of the Medical Department in August 1942. The official Army history of the investigation speculates that “the investigation of the Medical department was primarily undertaken as an effort to remove General Magee from his position . . . before General Magee’s 4-year term as the Surgeon General ended” (Armfield, 1963, p. 185). If this was so, the effort failed; he continued to serve until his term expired. Moreover, since the investigation was conducted by a committee consisting largely of civilian physicians who were not sympathetic to the need to streamline the Army staff, the committee did not produce what Marshall and Somervell wanted.

The inquiry dealt directly with organizational matters, such as the internal structure of the Surgeon General’s Office and the position of that office and of the offices of service command surgeons within the Army structure. Witnesses stressed the difficulties of operating under Marshall’s reorganization and the more-recent service command reorganization, complaining of the decentralizing of many matters to the service commands, including such matters as control over transfers and reassignment of medical personnel, a matter traditionally controlled by the Office of the Surgeon General in Washington. The final report, issued in September 1942, largely sided with the Surgeon General. It found that

medical service was a “highly developed professional service” rather than a supply service and could not operate effectively within the present organization of the War Department. The Surgeon General should be at staff level; surgeons in the Army Ground Forces, the Army Air Forces, oversea forces, and service command headquarters should also have staff positions. The committee found that the “existence of a semi-independent Medical Department within the Air Forces” had led to administrative confusion and duplication of effort. Every feasible means should be used to bring the Army Air Forces’ medical service under the control of the Surgeon General or, failing this, a clear delineation of the Air Surgeon’s functions under the Surgeon General should be made. The report accordingly recommended that the Office of the Surgeon General be placed on the special staff of the Chief of Staff that a position of Chief Surgeon, Services of Supply (with rank and responsibilities corresponding to those of the Air Surgeon and the Ground Surgeon), be created on the staff of the Commanding General, Services of Supply, and that a unified medical division be set up in each service command, headed by a surgeon on the staff of the commanding general. (Armfield, 1963, pp. 176–177)

The findings of the committee notwithstanding, General Somervell took the position that the report was largely contrary to the basic purpose of the March 1942 reor-

ganization, and the Secretary of War directed “there should be no Army organizational change with respect to the status of the Surgeon General” (Armfield, 1963, p. 184).

When General Magee’s term was up, the committee also frustrated Somervell and Marshall in the selection of the new Surgeon General—much as the Sanitary Commission had frustrated Secretary of War Stanton during the Civil War a century earlier. Marshall wanted a physician with current combat experience and selected Brigadier General Albert W. Kenner, then a theater surgeon in North Africa. Secretary of War Henry Stimson agreed and nominated him to President Roosevelt, who initially concurred, but later wrote Stimson: “My best advice is that he—General Kenner—is a good Doctor but that he would not be regarded as an outstanding choice by the medical profession” (as quoted in Armfield, 1963, p. 201). Eventually, on June 1, 1943, Brigadier General Norman T. Kirk, then the commanding officer of the Percy Jones General Hospital in Battle Creek, Michigan, who had “developed excellent ties with the civilians” (Cowdrey, 1994, p. 93) of the American Medical Association, was appointed Surgeon General.

### **The Resurrection of the Office of the Surgeon General: Planning for Peace and the Return of the War Wounded**

However, after Kirk’s appointment as Surgeon General, relations with the ASF improved, and over time, he was able to increase the control his office had over medical installations, particularly those in the ZI. Toward the end of 1943, General Somervell directed service command headquarters to elevate the status of technical service heads in their commands (Millet, 1954, p. 172). By early 1944, planning for hospitalization and evacuation within the United States was placed under the Deputy Chief for Hospitals and Domestic Operations in the Surgeon General’s office.<sup>21</sup>

An important addition to the Surgeon General’s responsibilities was the operation of the Medical Regulating Unit, the single clearinghouse for the “loading” of hospitals and the management of bed vacancies in the general hospitals in the United States:

Located within the Office of the Chief of Transportation, but under the direction of the Deputy Chief for Hospitals and Domestic Operations, Surgeon General’s Office, the Medical Regulating Unit became the nerve center for the distribution of patients from overseas to the general and convalescent hospitals. Its person-

<sup>21</sup> One reason for better relationships between ASF Headquarters and the Surgeon General’s Office was the work of Dr. Eli Ginzberg, an economist and statistician on loan from the ASF Control Division to head the Facilities Utilization Branch in the Office of the Deputy Chief for Hospitals and Domestic Operations. Ginzberg was responsible for long-range planning for hospitalization in the United States and investigated ways of using hospital facilities and personnel more efficiently. Ginzberg’s work was particularly

in accord with the thinking of Headquarters, Army Service Forces, which consistently sponsored long-range studies aimed at achieving more effective use of the personnel and facilities of all the technical services, and included . . . studies on the number of evacuees to be expected from overseas, on an integrated plan for hospitalization in the United States irrespective of command channels. (Armfield, 1963, p. 221)

nel worked closely with a medical regulating officer in the Air Surgeon's Office, with service command surgeons, port surgeons, and hospital surgeons. The orderly transfer of patients from ports to hospitals called for the amassing and transmission of much data—on capacities of hospital ships and trains, and of transports and planes used in evacuation, on numbers of patients arriving on specific dates, as well as on the numbers of beds available in the general hospitals. The existence of the Medical Regulating Unit and its authority to deal directly with the surgeons of the various commands concerned with the return of patients from overseas made it possible to carry out transfers of patients more speedily and efficiently than would have been the case if command decisions had had to be obtained at each step. (Armfield, 1963, p. 222)

Care for the American Soldier

In their landmark study of battle casualties, Drs. Gilbert Beebe and Michael DeBakey (1952) concluded, “World War II [was] fought with the lowest overall death rate in the history of the U.S. Army.” While the data, as shown in Table 8.2, certainly support their conclusion, World War II was so different in scale, scope, and duration as to make such comparisons questionable. Since the Army fought simultaneously in five major theaters of operation, the greatest portion of the force was engaged in support, or service, operations. When the United States entered the war in December 1941, 41 percent of the army’s 1.3 million men were assigned to combat divisions. When the war ended in Europe in the spring of 1945, 23 percent of the army’s 5.8 million men were in combat units. Through the period of active combat, roughly three-quarters of the Army was not assigned to ground combat units (Mansoor, 1999, p. 35).

Table 8.2  
Comparative Mortality in Various U.S. Wars

Conflict	Battle-Related Deaths			Other Deaths			All Deaths
	Killed in Action	Of Wounds	Total	Disease	Injury	Total	
World War II	9.0	1.10	10.1	0.06	2.2	2.8	12.9
World War I	12.0	4.40	16.4	16.50	1.4	17.9	34.3
Spanish-American War	1.9	0.08	2.7	34.00	2.0	36.0	38.7
Civil War, Union Army	21.3	13.60	34.9	71.20	3.4	74.6	109.5
Mexican War	9.9	4.80	14.7	103.90	3.7	107.6	122.3

SOURCE: Beebe and DeBakey, 1952, p. 21.  
NOTE: Data represent deaths per 1,000 men per year.

In addition, gross casualty figures mask the intensity of combat. For the infantry divisions most heavily engaged in combat after D-Day in Europe, total battle and non-battle casualty rates during 11 months of combat were as high as 252 percent because the army's replacement system kept feeding new personnel to the line division to keep the division end strength near authorized levels.<sup>22</sup> Moreover, even these figures mask the veracity of combat for the line regiments. Mansoor, 1999, pp. 251–252, notes that, of the “22,858 battle casualties suffered by the 9th Infantry Division in World War II, over 96 percent were sustained by the three infantry regiments.” The final death rate, however, would have been even greater if it were not for the advances made in the medical care of casualties, as discussed below.

### **Advances in Military Medicine**

A point of pride for the Army, as shown by a war poster distributed by the Office of War Information in 1944 (Figure 8.2), was that during World War I, between 8 and 11 of each 100 wounded men who reached forward hospitals alive died, compared to 4.5 per 100 during World War II. This was in line with a trend that had been going on for almost 100 years. Table 8.3 shows the proportions of the wounded that subsequently died in a number of major modern conflicts, starting with our war with Mexico in 1846.

The reduction in death rates during World War II was generally attributed to the use of blood plasma and whole blood, antibiotics—sulfa drugs and penicillin—and a chain of evacuations that standardized care and moved patients quickly to higher echelons so that they might receive the best care possible.

### **Blood Plasma and Whole Blood**

At the beginning of the war, the general belief was that plasma alone could compensate for the loss of whole blood that caused a medical condition known as *shock*. Early experience in North Africa, however, showed that plasma was not a total treatment.<sup>23</sup> It soon became clear that plasma was best as a first aid measure and as a supplement for whole blood, not as a substitute for it. By the end of the war, whole blood was flowing from home to medical units around the world, with 206,000 pints airlifted to Europe and 182,000 sent to the Pacific.

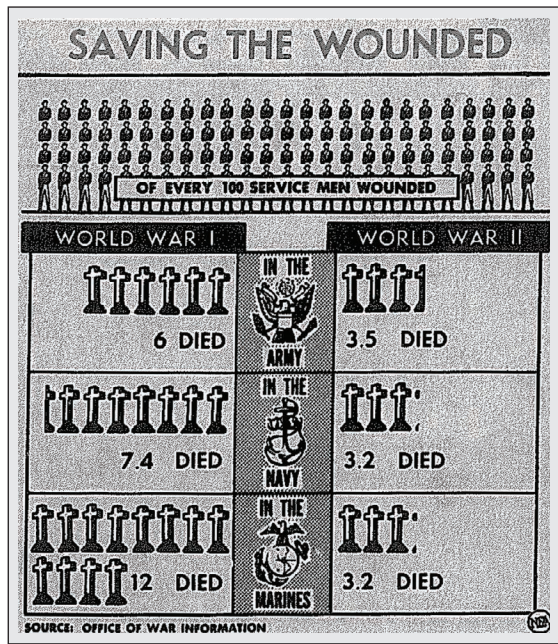
<sup>22</sup> Mansoor, 1999, pp. 254–255, notes: “Given the constraints of the ninety-division gamble, the Army of the United States simply lacked enough divisions in 1944 and 1945 to operate a unit replacement system in Europe. Individual replacements were the only other recourse. . . . The United States was the only nation able to maintain its fighting forces near full strength throughout the war, a fact that greatly impressed German commanders.”

<sup>23</sup> The Army later noted that the

early enthusiasm [for plasma] that accompanied its development had pushed aside sound clinical judgment and had led to the widespread misconception that it was an effective substitute for blood in shock. In fact, the organization and development of effective methods for the management of shock had been handicapped to an embarrassing degree by this misconception, which was firmly entrenched in both administrative and professional minds. (Kendrick, 1963, p. 56)



Figure 8.2  
Saving the Wounded: Poster Published by the  
Office of War Information



SOURCES: Maisel, 1944, back dust cover.  
RAND MG1164-8.2

**Antibiotics**

Even with the advances in military medicine developed during World War I, infection remained a persistent problem. But in World War II, this problem was greatly reduced through the use of sulfa drugs and, by the end of the war, the widespread use of penicillin.

In 1935, the German scientists Gerhard Domagk demonstrated that prontosil, which contains the sulfanilamide structure, was effective in controlling streptococcus infections in mice. In 1939, the Army Medical Department started to look for a sulfanilamide that could be applied locally. By summer 1941, although there was no “definitive clinical proof” and only “presumptive evidence” of the effectiveness of sulfa drugs,<sup>24</sup> the Army started to procure sulfanilamide tablets to be taken in case of a wound when aid was not immediately available, and envelopes with a shaker top containing powdered sulfanilamide and sulfanilazole to be sprinkled on wounds. The National Research Council’s (NRC’s) report after the attack at Pearl Harbor high-

<sup>24</sup> Correspondence between E. W. Archibald of the Canadian Army and General McGee, dated October 1942 (Lesch, 2007, p. 241). The actual form of the sulfa drugs progressed from sulfapyridine, to sulfanilamide, to sulfathiazole, to sulfadiazine.

**Table 8.3**  
**Deaths from Battle Wounds, Various Wars**

Conflict	Duration of Involvement	Nationalities Involved	Wounded (000s)	Died of Wounds (percent)
Mexican War	1846–1848	American	3.4	14.9
Crimean War	1854–1856	British	12.1	16.7
		French	39.9	22.1
		Russian	81.3	19.5
American Civil War	1861–1865	Union	318.2	14.1
Franco-Prussian War	1870–1871	German	96.2	11.5
		French	140.0	15.0
Spanish-American War	1898	American	1.6	6.7
Boer War	1899–1901	British	23.0	8.8
Russo-Japanese War	1904–1905	Russian	146.0	4.2
		Japanese	173.0	6.6
World War I	1914–1918	British	2,172.0	7.7
		French	3,000.0	8.3
		German	4,800.0	6.0
	1917–1918	American	224.0	6.1
World War II	1941–1945	American	598.5	4.5

SOURCE: Beebe and DeBakey, 1952, p. 77.

lighted the use sulfanilamide and sulfathiazole in reducing mortality and controlling infection. The report noted that while, during World War I, patients with “perforating abdominal wounds suffered an approximately 80 percent mortality rate, at Pearl Harbor casualties with the same type of wound who survived shock to undergo surgery and sulfonamide therapy nearly all recovered” (Lesch, 2007, p. 209). Soon, the sulfa drugs were being used routinely to control such diseases as pneumonia, gonorrhea, meningitis, dysentery, and streptococcal infections. Production increased from 760,000 pounds in 1940 to an annual rate of 8.7 million pounds in 1943. In 1944, however, production decreased by half because of an “optimistic turn in the war in mid-1944 . . . and, the initial perception that penicillin, which was beginning to enter military medical practice, would replace the sulfa drugs” (Lesch, 2007, p. 220).

Given the optimism that accompanied the NRC report on the use of sulfanilamide and sulfathiazole at Pearl Harbor, plans went forward for a controlled clinical evaluation at nine civilian hospitals. As the evaluation progressed, the results were not

at all what the NRC or the Army expected. The study concluded that “the prevention of wound infection must be placed squarely on accepted principles of surgical practice,” finding that

the use of sulfonamides as employed in these cases either systemically alone or locally alone, or combined, has not materially reduced the incidence or the severity of local infections in the wounds nor have they delayed the development of infection nor have they eliminated the pathogenic organisms from the wounds.<sup>25</sup>

Despite these findings, the NRC argued that the pristine conditions of the civilian hospitals taking part in the study did not duplicate the unique conditions of battlefields and therefore were not suitable for decisionmaking about “the use or disuse of bacteriostatic drugs as prophylactic agents in the prevention of local infection in war wounds.”<sup>26</sup> Possibly because of NRC equivocation and the fact that the sulfa drugs had been so widely accepted, their routine use continued. Further evaluations of these drugs were frustrated by the appearance of penicillin, which was clearly superior in controlling infections.<sup>27</sup> After the war, it became clear that, while sulfa drugs did not kill bacteria, they were an antimicrobial agent that limited bacterial growth. Penicillin, on the other hand, was an antibiotic that *killed* bacteria.

### ***Medical Evacuation: Echelons of Treatment, Standardized Medical Protocols, and Transportation***

One of the enduring advances in military medicine during the Civil War was the systematic evacuation of wounded soldiers from the front lines by dedicated stretcher bearers and the establishment of an ambulance corps. During World War II, the system matured into an organized, structured system for the evacuation and treatment of casualties that stretched from the front line to hospitals in the United States.

Because the American system put surgical facilities farther forward than ever before, it might also have been reasonable for the mortality rates at these facilities to be higher than ever before. After all, the “hopelessly” wounded, who would previously have died on the battlefield, might instead now die at an aid station or clearing company or while being moved to a field hospital. But that was not what happened.<sup>28</sup>

<sup>25</sup> Report by Frank L. Meleney to the Surgeon General of the Army, as reported in Lesch, 2007, p. 243.

<sup>26</sup> Statement by the NRC, as reported in Lesch, 2007, p. 244.

<sup>27</sup> Although Dr. Alexander Fleming discovered penicillin in England in 1929, it was very difficult to synthesize. By June 1942, however, enough penicillin had been produced to treat ten men. The Army trials in spring 1943 were so successful that when Pfizer demonstrated that its scientists had found a deep-tank fermentation process to produce the drug, the government had purchased 21 billion units.

<sup>28</sup> Ambrose, 1997, p. 321 suggests that the

remarkable rate of recovery for wounded GIs . . . benefited from the general physical conditions of the wounded. First of all the GIs were selected even within their age group. Once of three potential inductees were rejected by the Army doctors for physical reasons. . . . Second, they were, generally, in excellent physical condition. Third,

In part, this was because sick or wounded individuals were transported from one echelon to another as rapidly and efficiently as possible, subject to local conditions.<sup>29</sup> This scheme not only moved the wounded to safety, what one historian as a “mass-production, assembly-line” (Ambrose, 1997, p. 321) but systematically moved them to higher levels of medical treatment. Emergency work took place at the front, and more complicated work took place later, in the rear (Cowdrey, 1994, p. 173). The system was phased in such a way that surgeons took specified actions at specific times at specific hospitals, providing “continuous, integrated care from the time . . . [a soldier] was hit until he was dispatched home” (Cowdrey, 1994, p. 174). One noteworthy policy was opening wounds wide for full inspection and debridement—the surgical cleaning and trimming away of dead flesh—and not closing the wound until it was determined that it was free of infection. Table 8.4 describes the chain of evacuation and the appropriate medical protocols for each echelon. However, with the long evacuation policy in World War II, soldiers often received some care normally provided at a higher level if they could not be evacuated for a while and if the facility had the appropriate personnel to carry out the required procedures.

### Echelon I

Treatment began when a soldier was wounded. Each soldier carried a packet of field dressings and sulfa tablets and powder for immediate antibiotic and sanitary care. The soldier himself and/or his buddy and the company Medic gave immediate first aid, usually within the first half hour. Medics were trained to treat minor injuries and to stabilize serious injuries so that the injured could be transported to an aid station, which would be located 300 to 500 yards behind the front line. Personnel at the aid

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they were free from body lice, thanks to DDT, and adequately fed. . . . If the medic could get to the wounded man in time to stop the bleeding and prevent shock, his chances of recovery were excellent.

<sup>29</sup> A former Combat Medic, Keith Winston, 1988, p. 169–170, described how the system worked:

A boy gets hurt on the line. Within a minute or less a telephone message is sent back to our forward Aid Station, a distance of 300 to 1000 yards from the front where a Sgt. and 4 litter-bearers are always on hand. They rush right up to the line with a litter. During this time, the Company in which the casualty is a member, has their Aid-man administering first-aid on the spot—usually consisting of stopping the bleeding with Sulfanilamide powder, bandaging and giving wound pills internally. By that time, another litter team is there and carries the casualty to the nearest point where a jeep can travel—anywhere from 25 to 3000 yards, depending on conditions. The injured boy is then rushed to the Aid Station, one to three miles behind the line. Here the physician removes the first-aid bandage, makes a proper diagnosis and applies a more permanent bandage, administers blood plasma if needed, and in severe cases, gives morphine; makes the patient comfortable, warm, gives coffee, etc. Whereupon he's rushed back to a point known as Clearing Company, pretty far in the rear—this time by a comfortable ambulance which stands ready for action at the Aid Station's door. Now—here, if the wound requires it, he's given emergency operation or attention. This place is well-staffed and well-equipped. Then the casualty is taken by ambulance to an Evacuation hospital further back where first-class attention is administered. If the case is one whereby the wound or casualty is so severe and he won't get better very soon, he's shipped back even further to a General Hospital, and eventually back to the States. Reason for the continual moves? One of room. As the patient warrants a further move back, he leaves space for another boy, and needed room is of the essence. The Aid Station has no beds. Its job is the most important—to evacuate the wounded boy from place of incident to the rear, after essential treatment is administered to save his life. [A well-equipped rear station can] bandage [the soldier] with the skill that is possible only in a quiet hospital.

**Table 8.4**  
**Chain of Casualty Evacuation**

<b>Echelon</b>	<b>Facility</b>	<b>Brought By</b>	<b>Responsibility</b>	<b>Medical Protocol<sup>a</sup></b>
I	Aid station or unit dispensary	Walking, manual transport or litter, ambulance or other vehicles	Unit medical personnel	Apply initial battle dressing
II	Collecting stations to clearing stations	Walking, manual transport or litter, ambulance or other vehicles	Medical battalions, squadrons or regiments, collecting, ambulance and clearing elements	Triage; medical aid measures
III	Field or mobile hospitals; evacuation hospitals; convalescent hospitals	Ambulance, rail, airplane	Army Medical Service or Independent Corps Medical Service	Initial wound surgery, "debridement," no suturing, rest and short-term recuperative services
IV	"Communication zone" general hospitals, hospital centers, station hospitals	Rail, water transport, airplane, ambulance	Medical service of the theater of operations	Reparative surgery
V	General or special hospitals in the ZI	Rail, water transport, airplane, ambulance	Medical service of the GHQ or ZI	Reconstructive surgery, rehabilitative surgery

SOURCE: Olive-Drab, 2008.

<sup>a</sup> The phases of surgical management are spelled out in Chief of Staff of the Army, 1945, p. 2.

station would apply medical aid measures: “hemorrhage was controlled, splints and dressings applied, morphine administered for pain, plasma infused for resuscitation, a booster dose of tetanus toxoid was given and chemotherapy initiated” (Chief of Staff of the Army, 1945, p. 2).

### Medic

One cannot say too much about the important role the medic played in World War II. By 1944, there were more than 687,000 medics in the Army; “roughly one soldier in twelve was a medic” (Cowdrey, 1994, p. 104). Medics were noncombatant soldiers. They took the same training as infantrymen, with the exception of training on weapons. Typically, an infantry platoon would enter combat with three to four medics, and “after time on the line, . . . most units were down to one medic per platoon” (Ambrose, 1997, p. 311). Ambrose, 1997, p. 313, notes that,

to preserve their noncombatant status under the Geneva Convention, the War Department did not give medics combat pay . . . or the right to wear the combat infantryman Badge. . . . In some divisions rifleman collected money from their own pay to give their medics the combat bonus. . . . [And] five enlisted medics in the ETO were awarded the Medal of Honor; hundreds won the Silver or Bronze Stars.

One GI described the job of the medic this way:

There are worse things than being a rifleman in the infantry, not many, but being a medic is one of them. When the shelling and shooting gets heavy it is never long until there is a call for ‘MEDIC!’ That’s when your regular GIs can press themselves to the bottom of their hole and don’t need to go out on a mission of mercy. (Private Bryon Whitmarsh, as quoted in Ambrose, 1997, pp. 313–314)

One medic recalled the dreaded cry, “MEDIC,” which “forced him into the open. . . . Examining a wounded man, . . . cutting away clothes, . . . feeling for and discovering the wound” (Cowdrey, 1994, p. 260). Ambrose, 1997, p. 314, recounts that

Once the medic reached the wounded man, he did the briefest examination, put a tourniquet on if necessary, injected a vial of morphine, cleaned up the wound as best he could. Sprinkled sulfa power on it, slapped on a bandage, and dragged or carried the patient towards the rear.

### Echelon II

The division’s organic medical battalion provided second-echelon medical care. Typically, each battalion had three collecting companies and a clearing company. Collecting companies had ambulance and litter-bearer sections and were responsible for evacuating casualties from the regiments to the division’s clearing station for triage. Each clearing company was equipped to function as a small hospital. Usually, one platoon



of the company was in operation, while the other was packed and ready to “leapfrog” forward as the line of battle advanced. Those who required care beyond the station’s capabilities were prepared for transport to third-echelon treatment facilities.

The system proved to be very flexible. The Army’s history provides the following example:

In Italy, where the roads were relatively good and rugged country offered protection for clearing stations close to the front, the intermediate step was often bypassed. Ambulances, or jeeps fitted with litter racks, picked up casualties at the battalion aid stations, or if these were not accessible to vehicles, at ambulance loading posts within reasonable litter carry of the aid stations. If a collecting station were established, it would be located to serve two aid stations, or three if all the battalions of the regiment were engaged. (Wiltse, 1965, p. 3)

Again following the chain of evacuation, initial surgery took place at a field hospital of the second echelon that was capable of surgical operations with transfusion and plasma therapy. This was a versatile new unit staffed by surgical teams consisting of “two surgeons, anesthetist, and surgical nurse with two enlisted technicians” (Wiltse, 1965, p. 4). The hospital was generally close to the divisional clearing station so that surgeons could treat the wounded within the “golden period” of the first 6 hours after injury. This goal was not always met. In a sample of 3,310 cases of abdominal and thoracic wounds in Europe between September 1944 and May 1945, only 21 percent were operated on during the first 6 hours and an additional 46.8 percent between 6 and 12 hours. The vast majority, 86 percent, were operated on within 12 hours. Possibly because the triage system was effective, the death rate remained the same for all, at about 22 percent (Beebe and DeBakey, 1952, pp. 100–101).

### Echelon III

Generally, patients remained at field hospitals until they were strong enough to return to duty or to be moved to an evacuation hospital further to the rear but still in the combat zone, which could offer reparative surgery, usually between the fourth and tenth days after wounding” (Chief of Staff of the Army, 1945, p. 3). During World War II, there were two types of evacuation hospitals: a 400-bed hospital that could be moved quickly in two installments with its own organic transportation, and a 750-bed hospital in which mobility was sacrificed for somewhat more complete facilities. Ideally one 400-bed evacuation hospital backed up each division, some eight to twelve miles behind the clearing station, with one of the larger units supporting two divisions. Both types of evacuation hospital were prepared to give definitive treatment to all casualties (Wiltse, 1965, pp. 4–5).

Typically, patients stayed in evacuation hospitals for a week or two and either returned to duty or were passed to a fourth-echelon hospital in the relative safety of the communications zone. Alternatively, a patient could be passed on to a convalescent

hospital, “another combat zone unit, where the man no longer in need of constant medical or surgical care but not yet strong enough to fight could regain his vigor” (Wiltse, 1965, p. 5).

#### Echelon IV

The next stage of the journey, which brings the patient to the fourth echelon of the evacuation chain in the communications zone, was typically to a 1,000- to 2,000-bed numbered general hospital. Transportation might be by rail, ship, or air. Air transport was often via a C-47 cargo plane rigged with litter racks to hold 18 to 20 patients attended by personnel from a medical air evacuation transport squadron. The numbered general hospitals were usually grouped together and included hospital centers, station hospitals, and convalescent centers. The prime objective was to return the maximum number of patients to duty within the theater (Wiltse, 1965, p. 5).

How long patients stayed at a fourth-echelon general hospital depended on the theater's evacuation policy and on the judgment of the medical officers involved as to the ability of a wounded soldier to travel. For example, the policy in the Mediterranean Theater varied from 30 to 120 days, but for most of the time, it was 90. If, in the opinion of his doctors, a patient would be fit for duty in 90 days or less, he would be retained, treated, then returned to his unit or sent to a replacement center for reassignment.

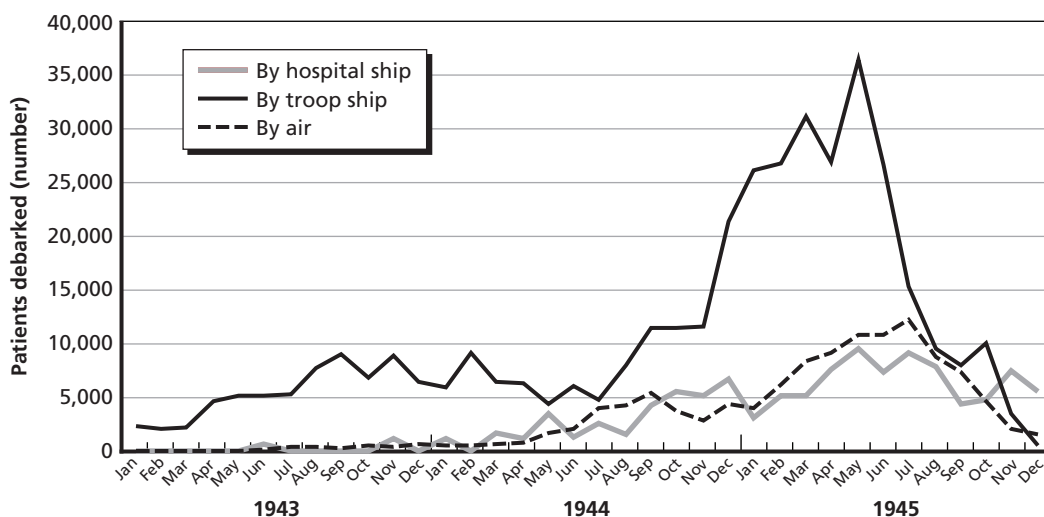
#### Echelon V

If the chances for his recovery within that time were remote or nonexistent, the patient would be sent to the ZI as quickly as possible, entering the fifth and final echelon of the chain of evacuation. Echelon V provided specialized, long-term care in military, VA, and civilian hospitals that could provide reconstructive and rehabilitative surgeries and other services.

The rapidity with which seriously wounded soldiers could travel through the five echelons of evacuation was remarkable for its day. The speed actually increased as the war went on and stood in sharp contrast with care that had been provided only 25 years earlier in World War I.

Figure 8.3 shows the modes of transportation for returning patients to the ZI from January 1943 to the end of 1945. By December 1945, the number of patients arriving in the ZI by air was approximately the same as had arrived by sea each month from January 1943 through November 1944. Medical evacuations by air, which had averaged only 272 per month in 1943, hit a peak in July 1945, with 12,326 patients debarking from aircraft. By the end of 1946, over 660,000 patients had returned to the United States. Of these, about 533,300 had come by water, either in troop transports or in hospital ships, and about 127,000 had come by air. The increased role aircraft played in these evacuations by war's end foretold the revolution in military medical care that was to take place in the latter half of the 20th century.

**Figure 8.3**  
**Patients Debarked in the United States, 1943–1945**



SOURCE: Smith, 1956, p. 324.

RAND MG1164-8.3

### Advances in the Care of the Wounded: Amputations

While the exact number of amputations during World War II can only be estimated,<sup>30</sup> the available estimates are reasonably consistent and point to a significant reduction in the rate of amputation from World War I to World War II.<sup>31</sup> Table 8.5 compares the amputation survival data for World War II with those for World War I and the Civil War.

A review of medical statistics after World War II (Beebe and DeBakey, 1952, p. 195) shows that a relative decline in the incidence of upper-extremity wounds and a smaller but still significant decline in mortality rates related to lower-extremity wounds resulted from surgical advances between the two world wars. Cleveland, 1956, p. 157, concludes that this “permitted the salvage of many limbs in the Second World War which would necessarily have been sacrificed in the First.” The relatively large

<sup>30</sup> Reister, 1975, pp. 4–6, discusses the difference between the casualty statistics from the Adjutant General’s Department and those from the Surgeon General’s office.

<sup>31</sup> Beebe and DeBakey, 1952, p. 194, estimates that 14,912 amputees survived World War II, but then note that this “includes an unknown number of non-battle cases.” This number is close to the “total separations for disabilities” from amputations Reister reported in *Medical Statistics in World War II*, 14,012, with 9,434 attributed to battle and 4,578 to nonbattle casualties (see Reister, 1975, pp. 400, 730). It is also important to note that the 9,434 amputations attributed to battle are fewer than the number of “traumatic amputations,” which Reister also reports (p. 16) as 10,047 nonfatal battle injuries. A *traumatic amputation* is the loss of a body part—usually a finger, toe, arm, or leg—that occurs as the result of an accident or trauma, rather than the deliberate actions of a surgeon. Paul Magnuson, the Chief Medical Officer of the Veterans Administration sets the figure at 18,000, and noted that during the war, there were 67,000 civilian amputations (see Magnuson, 1960, p. 270).

**Table 8.5**  
**Amputation Survivors, Civil War and World Wars I and II**

Conflict	Extremities Wounded	Individuals Wounded	Surviving Amputees	
			Number	Percent
Civil War	Upper	83,536	12,860	15.4
	Lower	89,528	8,002	10.2
	Total	173,064	20,862	12.1
World War I	Upper	55,000	2,359	4.3
	Lower	69,000	2,044	3.0
	Total	154,000	4,378	2.9
World War II <sup>a</sup>	Upper	167,000	3,152	1.9
	Lower	248,000	11,760	4.7
	Total	599,000	14,912	2.5

SOURCE: Beebe and DeBakey, 1952, Table 90, p. 194; Reister, 1975, Table 26, p. 400; and Otis and Huntington, 1883, Table CLXVIII.

<sup>a</sup> The World War II numbers include nonbattle amputations, which are not included in the World War I numbers.

number of lower-extremity amputations was due to the increasing use of land mines, particularly in the Mediterranean Theater in 1943, where land mines accounted for about 15 percent of all amputations, and during the German retreat in the closing months of the war in late 1944, where land mines accounted for almost 36 percent of all amputations (Hampton, 1957, p. 261).

Most of the amputations took place in the forward echelons—69 percent in Echelon III, 30 percent in Echelon IV, and only 1 percent in Echelon V facilities. The Army's medical history notes that, unlike in previous wars, the attitude

toward amputation was one of extreme conservatism on the part of all medical officers in mobile medical units as well as fixed hospitals in rear areas, because of the tremendous possibilities of modern reconstructive surgery. The operation was almost never performed unless the extremity was damaged beyond salvage or . . . conditions developed which endangered life or made further efforts to save the limb futile. (Hampton, 1957, p. 245)<sup>32</sup>

<sup>32</sup> Two types of amputation were permissible in the 1944 "Manual of Therapy," depending on the nature of the wound: (1) the guillotine amputation and (2) the circular or irregular short-flap amputation. Experience showed the guillotine amputation produced an unsatisfactory stump, requiring a second amputation (Cleveland, 1956, p. 164).

The implications of this change in attitude toward amputations would affect veterans and the VA for years to come.

### **Advances in the Care of the Wounded: The Psychologically Impaired**

Looking back on the war in 1949, the Surgeon General of the Army wrote that the experience of

two world wars has made it abundantly clear that psychiatric disabilities constitute a major problem in a modern army. These problems become intensified during times of emergency and in combat. Psychiatric disabilities lead to huge losses in effective manpower, but even more important than this is the fact that the rate of psychiatric disorders in any specific unit reflects the state of morale and efficiency of that unit. It is, therefore, of the utmost concern not only to the medical officer, but to the line officer as well, that every effort be made to prevent the occurrence of these disabilities. Of prime importance in prevention is a thorough understanding of the causes, symptoms, and methods of treatment of combat casualties. (Bliss, 1949)

### **Army Psychiatry on the Eve of World War II**

After World War I, the writings of Sigmund Freud and the advent of psychoanalysis captured the popular imagination,<sup>33</sup> but the vast majority of the 2,295 members of the American Psychiatric Association did not share that enthusiasm (Grob, 1991, p. 427). They were predominantly concerned with the treatment of psychotic patients in large state mental hospitals. As a result, the very language of psychiatrists at the beginning of the war, as captured in the *Standard Classified Nomenclature of Disease*,<sup>34</sup> was “totally inadequate” for the “special problems encountered in the practice of psychiatry in the military setting” (Menninger, 1948, p. 258). The much-used diagnosis of *psychoneurosis* reinforced the notions that an impaired soldier was not related to battle conditions but to a failure to screen out those predisposed and should immediately be discharged. During the war the Army would gradually develop a nonspecific diagnosis of “exhaustion,” and a new classification scheme of “transient personality reactions to acute or special stress.”<sup>35</sup> It would take the experience of the war and the successful treatment of

<sup>33</sup> In 1923, Freud presented his new “structural theory” of an *id*, *ego*, and *superego* in a book entitled, *The Ego and the Id*. In 1936, Freud’s daughter Anna published her own seminal book, *The Ego and the Mechanisms of Defense*, outlining numerous ways the mind could shut upsetting things out of consciousness.

<sup>34</sup> By the end of World War II, psychiatrists again faced a problem regarding the nomenclature for psychopathology. Within the United States, there were three different classification systems for mental illness in use. The first was the 1942 revision of the *Standard Classified Nomenclature of Disease*. The second was the *Armed Forces Nomenclature* (Medical 203). Third was the *Veterans Administration Nomenclature*, which was a slightly different version of the Medical 203. In 1952, the *Diagnostic and Statistical Manual of Mental Disorders* became the standard reference (Deyoung, undated).

<sup>35</sup> “A normal personality may utilize, under conditions of great or unusual stress, establish patterns of reaction to express overwhelming fear or flight reactions. The clinical picture of such reactions differ from that of neuro-

neurotic symptoms in noninstitutional settings to “reinforce the growing importance of psychodynamics and psychoanalytic model that ultimately became the basis for postwar transformation of the specialty” of psychiatry (Grob, 1991, p. 427).

On the eve of World War II, only four of 37 Army psychiatrists were board certified. Most were assigned duties in the field. They were not there, however, to treat patients. They were there to evaluate the behavior of soldiers, diagnose psychoneurosis when appropriate, and facilitate the discharge and transfer of such soldiers to state institutions. Treatment was not authorized because psychoanalysis was judged to have “no basis for meeting the challenge of the psychiatric need of masses of people and, therefore, had little application to the problems confronting military psychiatry.”<sup>36</sup> The Army was convinced that it would avoid such problems by screening out those predisposed to neuropsychiatric problems before such individuals ever joined the Army. Accordingly, “there was no effective plan or real preparation for the utilization of psychiatry” (Glass, 1966, p. 17), and in an economic move in 1940, the position of division psychiatrist, the centerpiece of the British and American psychiatric program of World War I, was eliminated. The position of division psychologist was not reauthorized until November 1943, once the lessons about treating neuropsychiatric casualties on the battlefield had been learned all over again.

### ***Mobilization and Preinduction Screening***

One lesson the Army learned from World War I was the importance of screening (see Karpinos and Glass, 1966). In World War I, the Army rejected 69,394, including 21,858, for “mental defects” (Bailey, Williams, and Komora, 1929, p. 85). Between the wars, the Army tried to expand the program to screen out not only overt but also covert mental disorders. The Army held recruiting officers personally accountable for “accepting and forwarding men who may be found unfitted for the service, . . . [and] the expenses incurred in consequence of the enlistment . . . [of such men might be recouped] against the pay of the officer responsible.”<sup>37</sup>

With the backing of the psychiatric community,<sup>38</sup> on May 19, 1941, the Director of Selective Service addressed the state Selective Service directors on the issue of psychological screening:

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ses and psychoses chiefly in points of direction relationship to external precipitation and reversibility” (Surgeon General of the Army, 1946, p. 1).

<sup>36</sup> Statement by G. Zilboog, as quoted in Menninger, 1948, p. 7.

<sup>37</sup> Army Regulation (AR) 600-750 was in force between 1931 and 1939 (Glass, 1966, p. 11).

<sup>38</sup> At the beginning of 1941,

it was fairly well assumed by various psychiatrists that those factors which might identify the potential neuropsychiatric casualty were known, . . . [and] it seemed not unreasonable to err on the side of rejecting a fairly large number of men who might not become neuropsychiatric casualties in order to eliminate the largest percentage of potential problems. (Berlien and Waggoner, 1966, p. 161)



Not only are the feeble-minded and the “insane” unsuitable, but also are certain of those handicapped people who are now doing well in civilian life only because they found ways of protecting themselves. . . . Military and naval experience is in favor of excluding from the armed forces all persons discovered to have mental or personality handicap of any material degree. (Menninger, 1948, p. 271)

This emphasis on screening had a profound effect on the nation’s mobilization program;<sup>39</sup> 1,250,000 men were rejected in 1942 and 1943 because of mental and emotional abnormalities. This was about 12 percent of those examined and was higher than any other cause of rejection. During the last six months of 1943, 20 percent of the men examined were rejected for neuropsychiatric reasons (Menninger, 1944, p. 807). It appears, however, that the vast majority of men rejected could have made “good soldiers.”<sup>40</sup> In fact, by early 1942, based on an extensive six-month test, the Director of Selective Service was reported to be

quite uncertain as to whether all rejections were justified and somewhat discouraged to learn that despite this psychiatric screening, considerable numbers of men were subsequently being discharged from the Army because of mental derangement. (Rowntree, 1943, p. 37)

Nevertheless, the Selective Service continued its program and increasingly rejected large numbers of men throughout the war (see Table 8.6).<sup>41</sup>

In retrospect, screening did not achieve its goal.<sup>42</sup> The number of neuropsychiatric disorders was reported to be “two to three times that of World War I despite the fact that rejections for psychiatric reasons were five to six times greater than those of World War I” (Glass, 1966, p. 7). Not only did screening fail to eliminate neuropsychiatric

<sup>39</sup> Rowntree, 1943, presents the development of the mobilization program for the “recognition and rejection of nervous and mental diseases at the armed forces induction station, based on examination, expert medical judgment or authentic statement of fact, . . . [as] the all-important factor in preventing these cases from entering the armed forces.”

<sup>40</sup> Using a sample of 2,054 men initially rejected for neuropsychiatric reasons but later inducted, Eagan, Jackson, and Eanes, 1951, p. 469, found that 79.4 percent were determined to have “rendered satisfactory service.”

<sup>41</sup> The Chief Psychiatric Consultant would later call Selective Service procedures a

luxurious attitude of rejecting so many men on questionable grounds . . . [when] examining physicians could not accurately determine who would be successful and who would fail as a combat soldier. . . . Induction-center elimination of men with minor symptoms of instability [seemed] to be overcautious and wasteful of manpower. (Menninger, 1948, p. 274)

<sup>42</sup> After the war, a number of studies

led to a general recognition that the psychiatric standards and procedures of World War II were obviously overcautious and, hence, caused a considerable and unnecessary loss of potential military manpower. They also indicated that psychiatric and psychological criteria at the time of examination for military service generally have not proved a reliable index for efficiently predicting future behavior and, furthermore, that greater proficiency can be accomplished by observing individuals with psychiatric difficulties under military conditions, rather than by psychiatric screening, at the time of their examination. (Berlien and Waggoner, 1966, p. 191)

**Table 8.6**  
**Neuropsychiatric Rejections: 1942–1945**

Men Rejected as a Percentage of	1942	1943	1944	1945	Average
Men examined	9.7	15.5	16.0	16.4	12.0
All men rejected	28.4	42.7	45.8	39.2	39.1

SOURCE: Menninger, 1948, p. 282.

casualties, it also meant that the Army did not focus on factors it *could* control and allowed the views of some commanders to persist that those with psychiatric combat breakdowns were merely cowards.<sup>43</sup> It was only after separating a large number of soldiers that the Army gave serious attention to preventing “psychological” discharges by improving leadership, changing personnel policy, and addressing motivation and developed a classification scheme that recognized the transitory nature of “exhaustion.”

### ***Relearning the Lessons of World War I***

Because the Army relied solely on screening, it was unprepared to deal with the neuropsychiatric casualties that overseas deployments and combat brought.<sup>44</sup> The initial battles in North Africa serve as a good illustration of the cost of getting this wrong: Only 5 percent of the neuropsychiatric casualties returned to duty.<sup>45</sup> In sharp contrast, with new procedures in place, during the summer 1944—two months after D-day—65 percent of the men removed from their units because of neuropsychiatric disorders eventually returned to duty (see Ginzberg, 1946). The latter number reflected the adoption of “two distinct treatment methods that would transform military psychiatry” (Broome and Richardson, 2010, p. 110), one that used sodium pentothal to facilitate a kind of psychoanalysis in which the patient re-experiences the extreme emotion of combat,<sup>46</sup> and another that emphasized the transitory nature of combat fatigue and

<sup>43</sup> Weinstein, 1973, pp. 133–136, describes the range of breakdowns. The famous “slapping” episode involving General George Patton is described in Drayer and Glass, 1973, p. 27. Rather than an isolated incident, “it symbolized in concrete fashion the attitudes of many line and medical officers. In essence, men who broke down in combat were cowards and derelict in their responsibilities to their country and fellow soldiers. General Patton later said he sought to shame the man and help him regain his self-respect” (Weinstein, 1973, p. 130).

<sup>44</sup> Glass, 1973, p. 989, notes:

The major lessons of World War II military psychiatry were derived from experiences with combat psychiatric casualties. Trial-and-error efforts to deal with these problems eventually produced effective programs of control and treatment. In retrospect, however, the concepts and practices as developed by combat psychiatry in World War II, generally, rediscovered, confirmed, and further elaborated upon the largely forgotten or ignored lessons learned by the Allied armies, including the American Expeditionary Forces, in World War I.

<sup>45</sup> The same situation existed in the Pacific Theater with the initial engagement of Marines at Guadalcanal, as noted in Helmus and Glenn, 2005, p. 13. Also see “Medicine: Guadalcanal Neurosis,” 1943.

<sup>46</sup> Menninger, 1948, pp. 309–311, calls this “psychotherapy under sedation.” This approach is based on Freudian notions that war neuroses “could be cured by making the patient confront his experience and recall

exhaustion and focused treatment on forward psychiatry characterized by the mnemonic, “*Proximity, Immediacy, Expectancy, and Simplicity*” (Helmus and Glenn, 2005, p. xiv; emphasis added). This had the advantage that large numbers of soldiers returned to their units.

At this point, it should be made clear that the clinical standard was to return a soldier to his unit. It was not the treatment he might expect to get in a nonmilitary situation. According to a Army Medical Department bulletin,

the primary objective of treatment was to restore the maximum number of soldiers to duty as quickly as possible. Disabling symptoms were removed first, and then the patient was assisted in reestablishing himself as a functioning member of a military body. (Tureen and Stein, 1949, p. 116)

The care a psychiatric casualty received need only be sufficient “to justify sending him back into the line. In other words, the medical officer treated the casual soldier only until he was able to return to combat, *even though after so doing he would probably become worse*” (Menninger, 1948, p. 37; emphasis added).

### **Organization of the Neuropsychiatric Services**

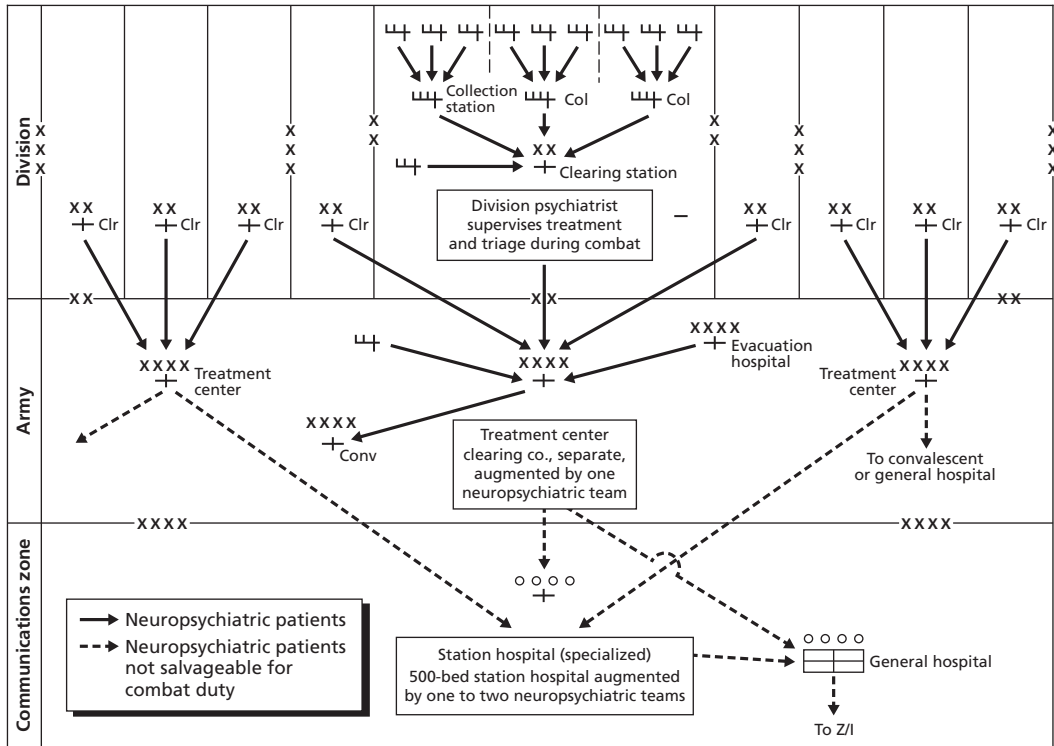
To carry out the policy of maximizing the number of soldiers returned to the line as quickly as possible, the Army established a system of triage that closely resembled that of World War I. Figure 8.4 shows the scheme of treatment and evacuation for neuropsychiatric patients in a combat theater.

The first echelon of care was the battalion aid station, where the battalion surgeon made the decision to return a soldier to his unit, send him to the regimental aid station for a short period of rest, or evacuate him to the division clearing station for psychiatric evaluation. As many as 60 percent of soldiers seen at this first echelon were returned to duty because it was judged that they could perform their duties, even though, as the Chief Consultant would later remark, most of these men were not “well, . . . [and] in many instances it would make their illness worse” (Menninger, 1948, p. 308). If it appeared possible to return a soldier to duty within three to five days, he was sent to the division psychiatric treatment and rehabilitation center; if not, he was evacuated to the Army Neuropsychiatric Center. If further treatment proved necessary, he was evacuated to the base section psychiatric hospital.

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painful memories” (Holden, 1998, p. 14). The therapeutic gains and procedures for administering sodium pentothal are described in Grink and Spiegel, 1945, pp. 170–178. These techniques were also used by the British starting in 1940 and include the use not only of sodium pentothal but also of lobotomies and electro-convulsive therapy (Holden, 1998, pp. 79–88). Others reported less-than-successful results (Weinstein, 1973, pp. 136–137). These techniques are illustrated in the film, *Let There Be Light* (Huston, 1946).

**Figure 8.4**  
**Organization of Neuropsychiatric Services in Combat Theater of Operations**



SOURCE: Hanson, 1949, p. 34.

RAND MG1164-8.4

### ***Numbers and Disposition of Neuropsychiatric Casualties***

While the exact number of neuropsychiatric cases in combat zones throughout the world, or even in the ZI, will never be known, the best estimate is that the number far exceeded admissions for battle wounds (see Table 8.7).<sup>47</sup> After the war, the NRC and the VA conducted a retrospective study to estimate how soldiers moved through the system. They found that between 65 and 88 percent of Army neuropsychiatric patients admitted during 1944 returned to duty, depending on the theater (see Table 8.8). In the early years of the war (1942–1943), when the tempo of combat operations was relatively low, neuropsychiatric evacuations accounted for 30 percent of all evacuations (see Table 8.9). During the last year of the war, when combat intensified and the

<sup>47</sup> In June 1944, the Surgeon General was told that the

large number of “battle exhaustion” and “operational fatigue” patients are not included in any available figures. A fairly large percentage of patients on orthopedic, gastrointestinal, and cardiovascular wards are primarily neuropsychiatric cases. Every severe traumatic patient, such as the amputee, has important psychiatric aspects. (Menninger, 1944, p. 808)

**Table 8.7**  
**World War II Admissions, by Cause**

Cause of admissions	Army (000s)	Navy (000s)	Total (000s)
Nonbattle injury	2,005	464	2,469
Battle wounds	592	91	683
Psychiatric and neurological	1,000	198	1,188
Other disease	13,876	5,267	18,400
Total	17,473	5,267	22,740

SOURCE: Brill and Beebe, 1955, p. 26.

**Table 8.8**  
**Echelon of Final Treatment for U.S. Army Neuropsychiatric Admissions,  
by Theater, 1944**

Echelon of Final Treatment	Distribution by Theater (percent)		
	Southwest Pacific	Europe	Mediterranean
Not evacuated home	65.2	80.1	88.1
Army field installation <sup>a</sup>	19.5	36.8	26.3
Station hospital	28.1	11.5	29.9
General hospital	17.6	31.8	31.9
Evacuated home	34.7	19.8	11.9

SOURCE: Brill and Beebe, 1955, p. 53.

<sup>a</sup> Evacuation hospital, field hospital, convalescent hospital, clearing station, etc.

**Table 8.9**  
**Evacuations to the Continental United States, 1942–1945**

Year	Total Army Patients	Neuropsychiatric Cases (percent)	Medical Cases (percent)	Surgical Cases (percent)
1942	8,880	30.9	55.7	13.4
1943	69,336	28.1	52.2	19.7
1944	161,848	23.1	37.3	39.7
1945	386,426	15.0	36.3	48.7
Total	626,490	18.8	38.6	42.7

SOURCE: Menninger, 1948, p. 322.

number of surgical cases increased sharply, the rate of surgical evacuations doubled, and neuropsychiatric evacuations dropped to 15 percent of all evacuations.

### ***Change in Policy for the Treatment of the Neuropsychiatric Casualties***

Until early 1945, the official policy of the Department of War was that

individuals permanently unfit for Army service because of neuropsychiatric disturbances will not be retained for definitive treatment but will be discharged and arrangements will be made for further care by the VA if such is indicated.<sup>48</sup>

Some treatment in the field could be undertaken if the patient could “within a reasonable period be returned to duty.”<sup>49</sup> Those sent back to the United States, however, were held in Army hospitals without treatment while awaiting discharge. Treatment was not authorized in Army hospitals until March 1945, and it took until June 1945 for formal Army policy to implement President Roosevelt’s order of December 4, 1944, that those returning from overseas not be discharged until they had “received the maximum benefit of hospitalization and convalescent facilities which must include physical and psychological rehabilitation, vocational guidance, prevocational training and resocialization” (Roosevelt, 1944).

Given the general shortage of psychiatrists and even bringing in clinical psychologists and psychiatric social workers,<sup>50</sup> the Army never had enough professionals. As a result, it used such “shortcut” treatments as therapeutic hypnosis and drugs, such as sodium pentothal. Group therapy became a substitute for individual treatment, and patients were assigned to special training units for both treatment and retraining for new jobs.<sup>51</sup>

### ***Excessive Discharges***

One consequence of the policy of segregating those diagnosed with neuropsychiatric disorders was that this became the preferred means of dealing with “ineffective” soldiers. Soldiers who could not adjust to Army life because of faulty attitudes, poor motivation, or minor physical handicaps and who did not respond to disciplinary measures

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<sup>48</sup> AR 615-360, as quoted in Menninger, 1948, p. 293.

<sup>49</sup> As provided for in AR 615-360.

<sup>50</sup> Given the shortage of psychiatrists in spring 1944, the Surgeon General and the Adjutant General developed “a plan to utilize the clinical psychologists in psychiatric work” (Menninger, 1948, p. 244; see also Seidenfeld, 1966). Prior to that, psychologists primarily “assisted with the examination of the draftees” (Menninger, 1948, p. 243).

<sup>51</sup> Menninger, 1948, p. 309, notes: “Patients could not be given the amount of individual attention, particularly psychotherapy, they should have received. Psychotherapy under sedation [with sodium pentathol and other drugs] was a shortcut, a timesaving device. It was not entirely new, but the circumstances of the war forced its extensive utilization, and consequent refinement and further development.”



were frequently referred to the Medical Department's psychiatric services. As Menninger, 1948, p. 33, noted:

The medical channels for discharge became abused. They were used as an exit from the Army for men who incapacitated themselves by their defective attitude. "Psychoneurosis" became the diagnosis commonly used for that purpose. It was undoubtedly not warranted when applied to many such cases.

In late March 1945, the Army changed its policy so that diagnosis of a psychoneurosis did not lead automatically to separation from the service. The new policy was that, "in itself, a mild psychoneurosis of any type will not be considered adequate for disability discharge. When an individual is suffering from psychoneurosis which is not incapacitating he will be returned to duty."<sup>52</sup> The complementary policy of separating men with "defective attitudes or ineptitude" with an administrative discharge rather than a medical discharge was not authorized until December 21, 1945.<sup>53</sup>

### ***Who Were the Neuropsychiatric Casualties of World War II?***

Today, what is known about the neuropsychiatric casualties of World War II largely comes from two studies, both led by Dr. Norman Brill. The first study was done during the war, under the auspices of the Neuropsychiatry Consultants Division of the Army Surgeon General's Office (Brill, Tate, and Menninger, 1945). The second study was done after the war, under the auspices of the NRC and the VA (Brill and Beebe, 1955).

Tables 8.10 and 8.11, respectively, compare the sociodemographic characteristics of men discharged from the Army for psychoneuroses in 1943 and 1944 with the characteristics of the Army as a whole. It should be noted, however, that these statistics reflect that the ground combat arms never received its "fair share" of the highest quality inductees. In general, those discharged tended to be older, less educated, less likely to be married, and bimodal in terms of length of service. Short lengths of service resulted from early weeding out of the "unfit." In addition, those discharged were more likely to have entered through the reserves or been drafted and were more likely to have served in the infantry, in combat units, and their time in service was highly correlated with periods when the wounded-in-action rate was high.<sup>54</sup>

### ***Returning Home to the Zone of the Interior for Care***

The Army's number of neuropsychiatric casualties became a big problem; 18.8 percent of all soldiers returning to the United States were neuropsychiatric patients

<sup>52</sup> Department of War Circular 81, March 31, 1945, as quoted in Menninger, 1948, p. 34.

<sup>53</sup> This was accomplished with the publication of Department of War Circular 391, as noted in Menninger, 1948, p. 127.

<sup>54</sup> Mansoor, 1999, p. 250, notes: "Without a system of unit rotation, divisions spent too much time in combat. The primary problem was the lack of divisions, which forced commanders to keep units in the line long after they should have been withdrawn and reconstituted."

**Table 8.10**  
**Selected Sociodemographic Characteristics of Men Discharged from the Army**  
**for Psychoneuroses in 1943 and Men in Total Army in 1943**

Characteristic	Within the Group Discharged (percent)	Within the Army Overall (percent)
Age		
Under 20	7.90	11.50
20–24	32.60	41.90
25–29	25.70	25.50
30–34	20.60	13.50
35 and over	13.20	7.90
Marital status		
Single	63.40	59.90
Married	31.20	38.00
Separated	0.05	0.05
Divorced	2.50	1.40
Widowed	2.40	0.02
Education		
Elementary school, grades 1–8	43.40	30.90
High School, 1 to 4 years	43.10	53.20
College, 1 year or more, including postgraduate work	11.50	15.90
Military grade		
Private	70.20	40.20
Private, first class	13.90	21.00
Corporal	9.00	18.30
Sergeant, any grade	6.90	20.50

SOURCE: Brill, Tate, and Menninger, 1945, pp. 633–634, from a random selection of men discharged from the Army between May 1, 1943, and January 1, 1944. In all, 5,937 questionnaires were mailed and 4,178 returned, a 70.3 percent response rate.

(Menninger, 1948, p. 322)—a number equivalent to 12 combat divisions (Menninger, 1944, p. 807).<sup>55</sup> As shown in Table 8.12, the rate of disability discharges for neuropsychiatric reasons during World War II was considerably higher than it had been during World War I.

One explanation for the increase in the discharge rate is that, during the early years of the war (1941–1942), there was a shortage of psychiatric beds, and Army policy

<sup>55</sup> The census of patients on May 1, 1944, included “15,700 neuropsychiatric patients in the Zone of Interior, one-third of whom were in locked wards” (Menninger, 1944, p. 808).

**Table 8.11**  
**Selected Sociodemographic Characteristics of Psychoneurotic Cases in 1944 and a Random Sample of the Total Army in 1944**

Characteristic	Random Samples, 1944	
	Psychoneurosis Cases (percent)	Entire Army (percent)
Age		
Under 20	18.8	26.9
20–29	58.9	53.1
30–39	21.8	17.3
40 and over	0.5	2.7
City Size by Population		
Under 2,500	20.7	27.1
From one of the 13 largest metropolitan areas	33.3	27.8
Intelligence quotient equivalent scores		
130 and above	7.3	9.2
110–129	29.6	33.3
90–109	31.0	34.2
60–89	28.8	20.8
59 and under	3.3	2.5
Education		
Elementary school, grades 1–8	35.9	26.3
High School, 1 to 4 years	54.7	59.0
College, 1 year or more, including postgraduate work	9.4	14.7
Marital status		
Never married	64.8	71.7
Married	31.9	26.5
Divorced or widowed	3.3	1.8
Length of service to initial breakdown (years)		
Under one	22.5	36
One and under two	33.0	24
Two and under three	25.9	33
Three and under four	13.2	35
Four or more	5.4	61
Total force	100.0	31
Religion		
None	1.7	0.3
Protestant	55.8	62.0

Table 8.11—Continued

Characteristic	Random Samples, 1944	
	Psychoneurosis Cases (percent)	Entire Army (percent)
Catholic	35.5	30.7
Jewish	6.8	6.5
Other	0.2	0.5
Months of service overseas		
None	31.9	11.7
1–9	12.7	18.0
11–19	22.3	33.4
20–29	20.2	27.9
30–39	7.0	7.4
40–49	0.9	1.1
50–59	0.1	0
60–69	0.1	0
Unknown	4.8	0.5
Component		
Regular Army and voluntary enlistments	15.7	22.2
National Guard	3.2	3.3
Inductees	81.1	74.5
Military grade		
Private	32.3	7.2
Private first class	29.2	24.1
Corporal	15.1	26.6
Sergeant, any grade	23.4	42.1
Arm or service		
AAF	19.3	26.1
Infantry	32.6	21.0
Armored	3.4	4.0
Field artillery	4.2	7.4
Engineers	7.7	9.0
Other services	32.8	31.6
Mission of unit		
Combat	60.2	38.2
Combat support	8.9	23.2
Combat service support	6.0	9.9
Service support	21.5	25.3
Training	3.2	3.3

**Table 8.11—Continued**

Characteristic	Random Samples, 1944	
	Psychoneurosis Cases (percent)	Entire Army (percent)
Number of battles or campaigns		
0	42.4	24.4
1	15.3	17.7
2	14.9	16.0
3	14.2	17.1
4	7.0	11.7
5	4.5	8.5
6 or more	1.7	4.6

SOURCE: Brill and Beebe, 1955, pp. 28, 30, 32, 33, 36–38, 40, 44, 46.

**Table 8.12**  
**Disability Discharges for Neuropsychiatric**  
**Reasons in World Wars I and II**

Disorder Type	World War I	World War II
Neurological	2.2	2.2
Psychiatric	8.9	21.3

SOURCE: Karpinos and Glass, 1966, p. 772.

NOTE: Numbers are per 1,000 mean strength per year.

“emphasized discharge rather than treatment” (Brosin, 1966, p. 318). The discharge rate, however, might even have been higher if all soldiers with significant neuropsychiatric symptoms had been admitted because of the lack of a generally accepted taxonomy to classify neuropsychiatric disorders (Glass, 1966, p. 4),<sup>56</sup> which also resulted in problems for the postwar disability compensation program. For example, in a study for the VA, Brill and Beebe, 1955, pp. 213–214, found that, without a generally acceptable taxonomy of psychiatric disorders,

[s]ome men with no symptoms and others who on follow-up examination were not considered disabled were nevertheless receiving compensation, as were some who felt there had been no change in their condition since entry into service. . . . Many

<sup>56</sup> Between December 1945 and January 1946, Burton and his colleagues examined 10,000 soldiers being processed for discharge at Camp Attenbury, Indiana. The men were between 20 and 35; most had been in combat overseas and had been away from home for three or more years. The men were largely from Michigan, Indiana, Kentucky, Ohio, and West Virginia; 2.57 percent “had sufficient complaints to warrant a neuropsychiatric diagnosis,” with 20 percent of those having “a disorder sufficient in severity to cause them some degree of incapacity” (Burton, Eaton, and McMahan, 1946, p. 170).

of the men who are receiving compensation never sought any treatment after their discharge from the service and they are somewhat less inclined to undertake future treatment than those not receiving compensation. . . . [While] compensation was granted more often to those who served longer, length of service was found to have no relationship to the severity of illness at follow-up.

### ***After the War***

During and after the war, the military departments and the VA undertook a number of studies to see how men discharged for neuropsychiatric reasons were “faring in civilian life” (Brill and Kupper, 1949, p. 730). The largest study during the war followed 4,178 enlisted men discharged from the Army for psychoneuroses between May 1, 1943 and January 1, 1944.<sup>57</sup> A mail survey was administered in July 1944 with a response rate of over 70 percent (Brill, Tate, and Menninger, 1945, p. 633). The major findings were:

85.9 percent of the men were employed in contrast to 93.7 percent who had been employed before induction. In general, these men considered their health to have been adversely affected by their Army service, but thought of this impairment chiefly in terms of physical rather than emotional illness. Of the entire group, 14.5 percent were hospitalized at least once after leaving the Army, but in many instances, the hospitalization was [how] the Veterans’ Administration [settled] claims rather than real rehabilitation. As early as 1942, Pratt had predicted the danger of this type of approach. (Brill and Kupper, 1949, p. 730)

The NRC, in cooperation with the VA, Army, and Navy, started the largest post-war study in 1948 (Brill and Beebe, 1955).<sup>58</sup> The authors collected data on 985 former soldiers admitted for psychoneurotic disorders during 1944. In addition, a control group of 397 Army enlisted men was randomly selected. Trained psychiatrists evaluated 67 percent of this sample. The remaining members of the sample filled out a questionnaire by mail. In all cases, VA claims folders were reviewed. Most of the clinical evaluations took place in the fifth or sixth year after first admission. At the time they left the Army, 81.2 percent of these former neuropsychiatric patients felt their health had gotten worse while they were in the service. While some indicated that they had improved after they left the service, 71.6 percent still thought their health was worse or much worse than when they entered the service (Brill and Beebe, 1955, p. 123). This was also reflected in their economic status. At the time of the follow-up, 75.9 percent were fully employed, 9.3 percent were employed part-time, and 14.8 percent were unemployed. The unemployment rate at the time (between 1950 and 1955) for the

<sup>57</sup> Over 70 percent of the 5,937 randomly selected former soldiers responded to the mail questionnaire. A smaller study of 142 veterans treated for neuropsychiatric disorders at the Valley Forge General Hospital from August through December 1943 found it took those discharged an average of 5.3 weeks to find a job. See Pratt, 1945, p. 4.

<sup>58</sup> Stretch, 1995, pp. 461–464, provides a further summary discussion.



relevant general population was 3.5 percent, for white males over age 24. The follow-up clinical examination of the men who were “definitely ill at separation” showed that 60 percent had some improvement in their conditions, although most were “not entirely free of psychiatric illness.” It is important to note that only 36 percent had actually sought treatment, and “there is no evidence that treatment played an important role in the general improvement which occurred between separation and follow-up” (Brill and Beebe, 1955, p. 135).

Brill and Beebe’s work also shed light on the role the VA played in caring for the neuropsychiatrically impaired. In their study, “treatment had been obtained through the VA by [only] 11 percent of the men . . . [although] about 40 percent . . . were drawing VA compensation for psychiatric disability” (Brill and Beebe, 1955, pp. 135–136). This suggests that the VA never saw the vast majority of veterans with some degree of neuropsychiatric impairment, and yet the VA had all that it could handle with those who did seek its help.

The neuropsychiatrically impaired, 454,699 veterans, accounted for 30 percent of all service-connected active disability awards in 1946. Of this group, approximately 19 percent were suffering from “diseases or conditions of the organic nervous system including the paralyzes and nerve injuries which in many cases are the result of combat wounds” (Bradley, 1947, pp. 14–15), and psychosis was the major disabling condition in about 15 percent of cases. The largest category, with about 66 percent of the cases, included those diagnosed with a “functional nervous disorder or psychoneurosis,” a category that includes what is called PTSD today (see Houts, 2000, pp. 954–957).<sup>59</sup> In terms of the hospitalized World War II veterans, by 1950, almost half of all VA beds were occupied by psychotic patients, with 7 percent available for other neuropsychiatric patients, 13 percent for tuberculosis patients, and 36 percent for general medical and surgical patients (Gray, 1951, p. 10).

Before the war, the group with psychoneurosis was largely invisible. Prewar psychiatry “was not in the business of conducting . . . psychotherapy with the ordinary person with problems of anxiety and depression, . . . [but] World War II showed that mental-health problems were not confined to those with severe mental illness” (Grink and Spiegel, 1945, p. 940). To this end, the Army changed the nomenclature it used for the diagnosis of mental illness in 1946, publishing Technical Bulletin, Medical 203 (Surgeon General of the Army, 1946), which the VA largely adopted in 1947. The idea that mental-health problems could befall normal individuals extended “the concept of mental-health problems and widened the domain of intervention for mental-health professionals” (Houts, 2000, p. 941) but was, however, not universally welcomed.<sup>60</sup>

<sup>59</sup> Grink and Spiegel, 1945, p. 345, notes that “many soldiers become emotionally ill only after returning home,” in what today would be called late-onset PTSD.

<sup>60</sup> Houts, 2000, p. 951, argues that Medical 203 “was an unabashed promulgation of psychodynamic theory.” The chairman of the American Psychiatric Association’s Committee on Nomenclature opposed Medical 203, and

As the World War II veterans flooded into hospitals and demanded services, the VA found its modalities of care inadequate and developed new models for treatment and rehabilitation of neuropsychiatric patients, especially the use of outpatient clinics. In 1947, the VA reported an increasing emphasis

in VA neuropsychiatric hospitals on giving acute-intensive treatment rather than the custodial type of care. Mental hygiene clinics have helped prevent the onset of mental illness that would have required hospitalization for many veterans. All these programs, although far from complete, have already demonstrated considerable long-term savings in terms of money and human suffering. (Gray, 1948, p. 4)

The value of outpatient mental-hygiene clinics cannot be overestimated.<sup>61</sup> The VA reported that “more than one in four of patients receiving mental-hygiene treatment would require hospitalization if treatment on an outpatient basis were not being provided” (Gray, 1951, p. 24).<sup>62</sup> By 1949, the shortages of trained personnel were critical, i.e., a “shortage of psychiatrists existed in the neuropsychiatric hospitals, while those hospitals in isolated rural areas remained critically understaffed” (Gray, 1950, p. 25).<sup>63</sup> To address the shortage, the VA increased its resident training program for psychiatry,<sup>64</sup>

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it was never published in the association’s journal. In 1946, Menninger led a group of “young turks” that eventually took over the American Psychiatric Association. See Grob, 1991, and Deyoung, 2012.

<sup>61</sup> In 1947, the VA explained, “These clinics are relatively new in the VA out-patient program. They are designed to provide as many veterans as possible with outpatient treatment for service-connected neuropsychiatric disabilities. In the care of veterans with neuropsychiatric diseases, it is most important to bring them under treatment as quickly as possible so as to improve their chances of cure. The longer initial treatment is delayed, the much greater is the chance that the disability will progress to the point where extended hospitalization will be necessary. On June 30, 1948, the case load in the 57 mental hygiene clinics was in excess of 14,000. During the last 6 months of the fiscal year for which data are available, just under 15,000 new cases were accepted for treatment” (Gray, 1949, pp. 18–19).

<sup>62</sup> The VA reported that, as of June 30, 1949, it

was operating 66 mental hygiene clinics and, in addition, had established a treatment program on a contract basis with 55 clinics operated by other agencies. It was estimated that at least 25 percent of veterans treated on an outpatient basis would have become hospital cases if the services of mental hygiene clinics had not been available. This service of providing treatment on a highly economical basis permitted the veteran to be treated for his disorder while he continued to function in the community in which he lived, often while he retained his job. (Gray, 1950, p. 25)

<sup>63</sup> Gray, 1950, p. 25, has more to say on shortages:

Although the number of VA psychiatrists has grown from approximately 498 to 750 within the last two fiscal years, a shortage of psychiatrists existed in the neuropsychiatric hospitals, while those hospitals in isolated rural areas remained critically understaffed. The slow rate of recruitment of trained psychiatrists interfered with the expansion into new hospitals of the psychiatric-treatment program.

<sup>64</sup> According to Gray, 1950, p. 25: “At the conclusion of . . . fiscal year [1949], a total of 366 residents in psychiatry were being trained in 36 VA hospitals and 13 clinics in cooperation with 38 medical schools.”

and it expanded the roles of clinical psychologists and social workers.<sup>65</sup> During the ensuing years, these three professional groups struggled to work out their professional relations, in a process that continues to this day (as discussed in Menninger, 1950). On the eve of the Korean War, however, care for neuropsychiatric patients of World War II remained problematic and in many ways invisible;<sup>66</sup> it was just not fashionable to talk about the lingering aftermath of the great “crusade.”<sup>67</sup>

Books like *The Greatest Generation* by Tom Brokaw justly report how those who served in World War II

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<sup>65</sup> The VA reported that,

The 260 clinical psychologists operating in a number of VA hospitals and mental hygiene clinics made significant contributions to the knowledge and techniques for the treatment and care of veteran-patients. As a result of research studies conducted by the clinical psychologists, increasingly efficient techniques for improving diagnosis and therapy were developed, designed to meet the needs of the psychiatry and neurology programs. In a number of hospitals clinical psychologists participated as teachers in the in-service programs for nurses, attendants, and other personnel. They assisted in the diagnosis of neuropsychiatric conditions and in appraising the personality of the patient. Clinical psychologists also were increasingly utilized in individual and group psychotherapy. In cooperation with a number of universities, the Veterans Administration sponsored a training program for clinical psychologists. Many trainees, upon completion of their course, indicated a desire to continue with the Veterans Administration. These graduate trainees were particularly valuable employees because they had been oriented to veteran needs and station operation during their professional training. (Gray, 1950, p. 27)

And according to Gray, 1949, p. 28: “The job of the VA social worker is shifting from the gathering of information to actual participation, as a member of the clinical team, in the study and treatment of patients. . . . In addition to helping veterans make their readjustments toward a normal life, the VA social worker also aids patients to accept treatment.”

<sup>66</sup> The VA reported that, in 1950,

[n]europsychiatric hospitals remained overcrowded at the end of the fiscal year, operating at more than 95 percent of capacity, a figure considered too high in terms of accepted standards of hospital administration. . . . The number of psychiatrists available in this country remains inadequate, and the ability of the Veterans Administration to draw from this number is limited. Consequently, continued effort was made during the year to increase patient turn-over, especially with chronic patients. Stress was placed upon active rehabilitation programs. (Gray, 1951, p. 22)

It also reported that the

number of patients treated on an out-patient basis in VA mental-hygiene clinics increased 13 percent over the previous year, averaging 11,704 patients each month. The number of treatments increased 19 percent, from 32,498 to 38,760. In addition, an average of 10,109 patients each month were receiving an average of 33,586 mental-hygiene treatments monthly with private psychiatrists on a fee basis, and in mental-hygiene clinics under contract with the Veterans Administration. (Gray, 1951, p. 24)

<sup>67</sup> *Crusade* is the word General Eisenhower used to describe the war in Europe (Eisenhower, 1948). In 2012, the film *Let There Be Light* was restored and released to the public:

The film, commissioned by the Army near the end of the war, was intended to prepare Americans for the realities of what combat had done to those sent to war but also to show that their psychological wounds could often be treated with therapy. But when it came time to release the film, the Army balked, claiming it violated the privacy of the soldiers involved. [John] Huston [the film’s director], never bought that explanation. “I think it boils down to the fact that they wanted to maintain the ‘warrior’ myth, which said that our Americans went to war and came back all the stronger for the experience, standing tall and proud for having served their country well.” (Vogel, 2012, p. A19)

answered the call to help save the world from the two most powerful and ruthless military machines ever assembled, . . . [and how] when the war was over, [many of] the men and women who had been involved, in uniform and in civilian capacities, joined in joyous and short-lived celebration, then immediately began the task of rebuilding their lives and the world they wanted. (Brokaw, 1998, p. xxvii)

Unfortunately, there are other stories also to be told of those permanently scared by the war. They are also the legacy of the war.<sup>68</sup>

## General Medical Care in the Zone of the Interior

From the standpoint of hospitalization in the United States, World War II can be divided into two periods: the period of mobilization, which extended from September 1940 to the latter part of 1942, and the period of combat, from the latter part of 1942 until the end of the war.<sup>69</sup> During the first period, the major medical activities were centered in the station hospitals at training bases and mainly treated injuries from training accidents. In the second, the emphasis shifted to general and convalescent hospitals at central locations throughout the ZI, which received the wounded from combat theaters.<sup>70</sup>

### General and Specialized General Hospitals

The standards for admittance to a general hospital in the ZI were

those needing specialized treatment of the types for which general hospitals had been designated; those who would be hospitalized for ninety days or more; those upon whom elective surgery of a formidable type would be performed; those with specific types of fractures; and, with one exception, those evacuated from overseas theaters. (Smith, 1956, p. 109)<sup>71</sup>

<sup>68</sup> For a first-hand account of the “hidden legacy” of the war, see Vento, 2011.

<sup>69</sup> The Navy and Marine Corps commenced major offensive land operations in the Pacific with the landing on Guadalcanal on August 7, 1942. The first major offensive operation of the war for the Army was Operation Torch, the invasion of North Africa, which started on November 8, 1942.

<sup>70</sup> By the end of the war, there were “61 named general hospitals, 4 camp general hospitals, 1 prisoner-of-war general hospital” (Brosin, 1966, p. 313) in the ZI.

<sup>71</sup> ASF operated all general hospitals in the United States, caring for patients from the ground, air, and service forces alike. In fall 1942, the Air Forces unsuccessfully moved to establish separate general hospitals: “The Air Surgeon contended that Air Forces men, especially combat crew members, required specialized care which only AAF hospitals could give” (Smith, 1956, p. 106). By 1943, it was agreed that all general hospitals would continue to operate under the Surgeon General and ASF’s commanding general but that combat crew members suffering from operational fatigue alone would go directly to AAF convalescent centers and that the center at Coral Gables, Florida, would have the authority of a general hospital to reclassify officers for limited service or to recommend retirement review for eventual separation.

The shortages of medical and surgical specialists prevented fully staffing every general hospital with all the skills that might be needed, so 21 general hospitals were designated for special services, such as chest surgery, maxillofacial and plastic surgery, ophthalmic surgery, treatment of the blind, neurosurgery, amputations,<sup>72</sup> vascular surgery, and the treatment of the deaf.

### Convalescent Hospitals

In October 1942 (see Figure 8.5), AAF requested authority “to establish and operate specialized hospital and recuperative centers for individualized treatment, rehabilitation, and classification of AAF personnel” (as quoted in Smith, 1956, p. 118). Surgeon General Magee strongly disapproved of the establishment of convalescent hospitals; in his view, they would lead to duplication of buildings and a waste of personnel and equipment. AAF persisted, and on June 21, 1943, ASF headquarters approved the establishment of convalescent annexes at general hospitals and allowed AAF to establish “convalescent centers for the care of both combat crew members suffering solely from operational fatigue and other Air Forces patients whose medical care had been completed in general hospitals” (Smith, 1956, p. 120). No doubt acceptance of this idea of establishing convalescent facilities also resulted from the VA’s inability to accommodate large numbers of disabled veterans and from the resulting public pressure to keep patients in military hospitals as long as possible.<sup>73</sup>

Starting in June 1943, ASF began to establish convalescent annexes in hospital barracks, leased schools and inns, or vacated Army housing. By fall 1943, convalescent patients accounted for approximately 75 percent of the patient load of general hospitals (Smith, 1956, p. 188). Convalescent hospitals, as such, were not authorized until spring 1944. They were designated as “places for housing and feeding ambulatory patients and for preparing them through physical and military training for return to duty” (Smith, 1956, p. 189). Unfortunately, they often lacked the essential personnel and facilities; barracks were often used that lacked the classrooms, shops, and gymnasiums that were considered essential for rehabilitation programs at convalescent centers. It was not until President Roosevelt intervened that the program really moved forward (Smith, 1956, p. 190). On December 4, 1944, the President informed the Secretary of War that no overseas casualty was to be discharged from the service until he had received “the

<sup>72</sup> Five amputation centers were designated in March 1943 at the following Army general hospitals: Walter Reed General Hospital, Washington, D.C.; Lawson General Hospital, Atlanta, Georgia; McCloskey General Hospital, Temple, Texas; Percy Jones General Hospital, Battle Creek, Michigan; and Bushnell General Hospital, Brigham City, Utah. The amputation center at Thomas M. England General Hospital, Atlantic City, New Jersey, was established in August 1944. The seventh, and last, center was designated at McGuire General Hospital, Richmond, Virginia, in January 1945. See Peterson, 1962.

<sup>73</sup> Starting in December 1943, the Army began to keep all patients whose disabilities were incurred in the line of duty in military hospitals until they had reached the “maximum degree of recovery.” The only exception was soldiers who had tuberculosis or who had been diagnosed as psychotic. See Smith, 1956, p. 241.

maximum benefits of hospitalization and convalescent facilities,” including “physical and psychological rehabilitation, vocational guidance, prevocational training and resocialization” (Roosevelt, 1944).

Rehabilitation took the form of physical and occupational therapy and retraining. One of the preeminent facilities was Percy Jones General Hospital Center in Battle Creek, Michigan, where civilian teachers ran a tutoring program; patients earned high school credits; and some completed General Educational Development programs and received high school diplomas.<sup>74</sup> Of particular interest to President Roosevelt was the rehabilitation of the blind. The Army established centers for the blind at Valley Forge, Pennsylvania, and San Francisco, California, and the Navy established them at Philadelphia, Pennsylvania, and (in May 1945) in Avon, Connecticut, at the Old Farms Convalescent Hospital. These centers were phased out after the war.<sup>75</sup>

### Personnel to Provide Rehabilitative Services

Throughout the war, there was always a shortage of trained physical and occupational therapists to work with the physically disabled. For reasons that are not entirely clear, the Army was willing to address the physical therapy problem in a much more direct way than it was willing to address the shortage of occupational therapists.

Just before Christmas 1942, Congress authorized female physical therapists to be part of the Medical Department for the duration of the war, plus six months, with the “relative” ranks of second lieutenant through captain; it was not until June 1944 that they were given full commissions in the U.S. Army (McMinn and Levin, 1963, pp. 11, 15–16). The first female “officers” arrived in March 1943, reaching a strength of 1,300 during September 1945. This was far below the stated requirement for 1,779, a requirement that was itself constrained by the shortage of physical therapists.

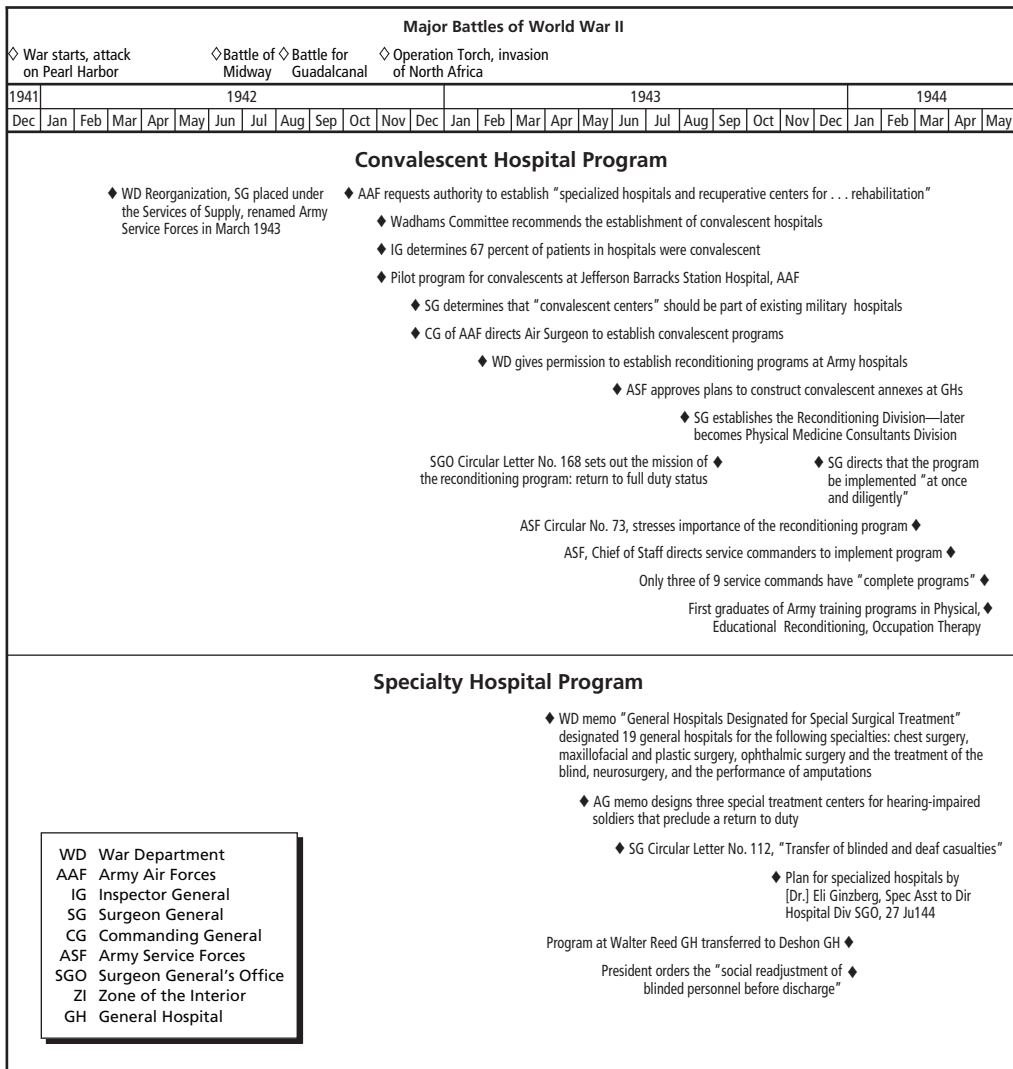
Originally, the Army wanted to have one physical therapist for every 100 beds in hospitals in the ZI. The shortage of physical therapists, however, prevented them from ever getting close to that number. The November 1943 revision to the standard table of organization for a general hospital with 1,000 beds provided only three physical therapists per hospital (McMinn and Levin, 1963, p. 90). The Army tried an intensive recruitment program but was able to “procure” only 293 physical therapists between December 1944 and June 1945. To try to alleviate the shortage of physical therapists, the Army started its own training program at ten general hospitals and contracted with

<sup>74</sup> In November 1942, the Army and the American Council on Education developed a battery of tests to measure high school–level academic skills. The test battery gave those who had entered service before completing high school a way to demonstrate their knowledge. Those who passed were awarded the high school diploma they needed to get civilian jobs and gain access to education or training programs. See also Cowdrey, 1994, p. 325.

<sup>75</sup> On June 5, 1946, the Department of War ordered that,

with the exception of the Old Farm Convalescent Hospital . . . all convalescent hospitals in the continental United States, which were established during World War II, . . . be discontinued, . . . [and replaced by] by a convalescent annex which will operated as an integral part of the general hospital. (Loughlin, 1947, p. 66)

**Figure 8.5**  
**Timeline for the Establishment of Convalescent and Special Hospitals During**  
**World War II**



SOURCE: Derived from Loughlin, 1947; Smith, 1956.

RAND MG1164-8.5a



Major Battles of World War II																																										
◇ D-Day: Invasion of Northern Europe												◇ Battle of Okinawa												◇ V-E Day																		
1944												1945												1946																		
Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Convalescent Hospital Program																																										
◆ WD designates seven convalescent centers as hospitals																																										
◆ WD authorizes 40,000 beds in AAF and ASF convalescent hospitals																																										
◆ President's letter to SecWar shifts program to include return to civilian life																																										
◆ ASF Circular No. 419 provides general outline of reconditioning programs at convalescent hospitals																																										
◆ Buildup of convalescent hospitals under way																																										
◆ ASF Manual M-7 provide details in the "Reconditioning Training Programs for ASF Convalescent Hospitals, ZI"																																										
◆ ASF Circular No. 219 establishes departments of occupational therapy at general and convalescent hospitals in the ZI																																										
◆ Convalescent beds occupied: 41,752																																										
◆ SG reduces convalescent beds to 21,000 by January 1945, to 14,000 by April, and to 8,000 by June 1946																																										
◆ Last graduates of Army training programs in physical, educational reconditioning, and occupational therapy; in total, 5,924 were trained																																										
◆ ASF Circular No. 92 returns specified general and convalescent hospitals to the control of the SG																																										
◆ ASF Abolished																																										
◆ All convalescent hospitals closed, except the one for the blind																																										
Specialty Hospital Program																																										
◆ Old Farm Convalescent Hospital (Special) opened for the blind																																										
◆ By fall of 1944, amputation centers increased from 500 to 750 beds each, and neurosurgical centers from 250 to 500																																										
◆ By June 1945, there were 234 centers for 21 specialties with a total of 132,178 beds in 65 general hospitals in the United States																																										
◆ During September 1945, when specialized centers were being relocated because some hospitals were being closed, the SGO requested the construction of special buildings for centers for rheumatic fever, deaf, paraplegic, neuropsychiatric, and plastic surgery patients in hospitals that were expected to remain open for long periods																																										

three civilian institutions to train the enlisted women of the Women's Army Corps (WAC) to become physical therapy technicians. By the end of the war, however, it had trained only 413 technicians (McMinn and Levin, 1963, p. 232).

The situation with occupational therapists was even worse. Despite an endorsement from the Surgeon General that "our general hospitals, particularly, . . . need their service very badly" (as quoted in Loughlin, 1947, p. 196) and his finding that "their work was of professional character and formed an important part of the treatment given to patients especially in orthopedic and neuropsychiatric cases" (McMinn and Levin, 1963, p. 251), the Department of War refused to give them commissions, and hospital construction plans provided no space for occupational therapy workshops.<sup>76</sup>

Given his inability to commission occupational therapists and the shortage of physical therapists, the Surgeon General decided to train his own. He developed programs for physically and educationally reconditioning officers and enlisted men, drawing on the skills of civilian occupational therapists and occupational therapist assistants from the WACs.<sup>77</sup> The first program to train physical reconditioning instructors was opened on May 8, 1944.<sup>78</sup> In total, 5,024 were trained before the programs ended in October 1945.<sup>79</sup>

### Medical Discharges During the War

Throughout the war, the Army tried to balance the conflicting goals of retaining manpower in the service and reducing the number of hospital beds in the ZI. This resulted in a number of "ambiguous or even contradictory directives" (Brosin, 1966, p. 311). In fact, there was more to this than just retaining manpower or freeing beds. It had a lot to do with the state of the VA during the war, as noted by the chief orthopedic consultant in his retrospective report, written circa 1956:

At the onset of the war, it was the practice to transfer patients no longer fit for military duty to the Veterans' Administration for treatment and discharge. It rapidly became evident, however, that the Veterans' Administration lacked the facilities and personnel to handle the large number of disabled. Furthermore, patients objected strenuously to discharge from the Army until they had reached maximum improvement. They felt that they received better care in the military hospital, and, in some instances, their incomes decreased upon separation from the

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<sup>76</sup> The Navy did commission occupational therapists.

<sup>77</sup> Physical reconditioning included bed and ambulatory exercises, games, sports, and remedial gymnastics; educational reconditioning included counseling and guidance to facilitate personal adjustment and mental stimulation through educational and pretechnical vocational training.

<sup>78</sup> Loughlin, 1947, pp. 223–263, describes the training program extensively.

<sup>79</sup> The 5,024 who were trained broke down this way: physical reconditioning, officers and enlisted men, 1,993; educational reconditioning, officers and enlisted men, 1,603; occupational therapy, civilians and WACs, 1,428 (Loughlin, 1947, p. 263).

service. This led to a change in procedures late in 1943, which called for the keeping of patients under military control until they reached maximum improvement. This plan necessitated extremely long hospitalization in many orthopedic cases. (Peterson, 1962, p. 51)

Nevertheless, the Surgeon General tried to reduce the number of patients in Army hospitals. In May 1945, he announced that the term “maximum degree of recovery”

referred to the point in a patient’s treatment when progress appeared to have leveled off and no further substantial improvement could be anticipated. Patients reaching that point, even though they had not made full compensatory adjustment to disabilities, were not to be kept longer in Army hospitals. (Smith, 1956, p. 242)

The administrative procedures, however, that moved the disabled out of the Army were mired down in interminable delays for most of the war, with officers and enlisted men discharged through separate procedures, often with very different benefits. Generally, disabled officers were “retired” with lifetime benefits, such as access to the Army’s medical system, commissaries, and clubs, while disabled enlisted men were usually discharged. This situation did not change until 1949, when “allegations of unfairness, inequity, and inefficiency in the existing disability retirement system became so extensive” (Pleeter, 2005, p. 745) that Congress passed the Career Compensation Act of 1949.<sup>80</sup>

World War II officer disability discharge cases were sent to the Adjutant General in Washington for “instructions on assignments” (Smith, 1956, p. 124). This proved so laborious that, after March 1942, post and service commanders were given the authority to reassign officers to “limited duty” and to retain them for the duration of the war. If, on the other hand, a disabled officer was to be separated, i.e., medically retired, the procedure was much more laborious:

[Officers were] kept in a hospital while its commander forwarded recommendations of his disposition board to service command headquarters; the service commander issued orders for the appearance of the officer before a retiring board; the board assembled and considered the case, and sent its findings to Washington for review by the Surgeon General, the Adjutant General, and the Secretary of War’s Separation Board; and the Adjutant General issued orders for the officer’s disposition. (Smith, 1956, p. 243)

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<sup>80</sup> The 1949 legislation was based upon the recommendations of the so-called Hook Commission, which recommended the creation of a temporary disability retirement with periodic medical evaluations for the first five years of retirement, and if found fit, return to active duty (see Hook, 1948). According to Pleeter, 2005, pp. 745–746:

Under the new system, all disabilities had to be rated under the standard schedule of rating disabilities in use by the Veterans’ Administration, and the resultant ratings became a factor in the determination of actual disability retired pay entitlements and their taxability. The new system covered officer and enlisted personnel of both the regular and reserve components, and it authorized temporary as well as permanent disability retirements. The disability retirement system in effect today remains basically unchanged from that adopted in 1949.

Late in the war, a number of procedures were initiated “speeding the retirement of officers” by increasing the number of boards, constituting “retiring boards” at general hospitals and convalescent centers, and revising the technical manual, freeing 4,200 hospital beds annually (Smith, 1956, pp. 246–247).

In general, enlisted men were separated from the Army much more quickly, with a medical discharge rather than a medical retirement. Commanders of general hospitals had the authority to issue Certificates of Disability and Discharge to separate enlisted men without further review by higher headquarters.

### **Demobilization and Contraction of the Zone of Interior Hospital System**

The Army’s history of the war characterizes its demobilization as “one of the cardinal mistakes” of World War II (Sparrow, 1952, p. 297). The basic problem was that, unlike the aftermaths of previous wars, the United States now had substantial worldwide commitments and required an army considerably larger than the one it had before the war began. Historically, whole units had carried out the demobilizations. The unit method allowed units to maintain their integrity, permitted the greatest dollar economy in the employment of trained men, and was comparatively simple. The demobilization after World War II, however, was organized primarily according to individuals’ service record to include such things as time in the Army, time overseas, time in combat, number of wounds, and paternity.<sup>81</sup>

After the Japanese surrender, General Marshall reiterated the Army’s policy that every member would be treated as an individual and that the primary emphasis would be on the rapid discharge of military personnel in the order of priority determined by their Adjusted Service Rating Scores (points). When Japan formally surrendered on September 2, 1945, the Army was about 8 million soldiers strong. (Figure 8.6 shows the Army discharge program from the end of the war through June 1946.) To maintain an authorized Army of 1.55 million,<sup>82</sup> which at the time included the Air Force, Congress authorized continuation of the draft. As a result, the Army was simultaneously discharging large numbers of experienced troops and inducting new raw recruits who were being drafted for a fixed period.<sup>83</sup>

After V-J Day, the Medical Department found itself in a squeeze between its needs and the Army’s policy.<sup>84</sup> While the department’s personnel were entitled to

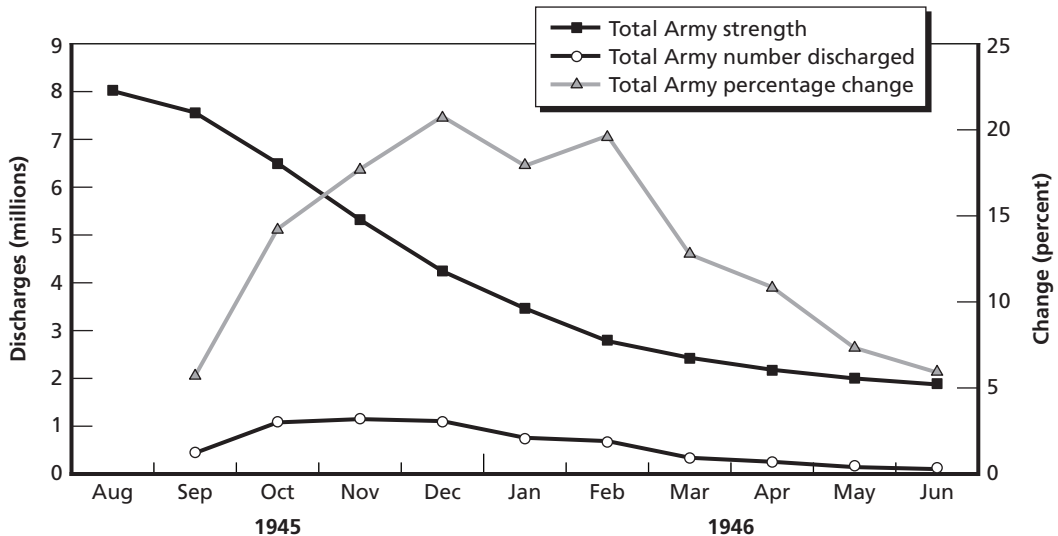
<sup>81</sup> See Sparrow, 1951, Chapter II.

<sup>82</sup> The end strength of 1.55 million was for July 1, 1946, with an authorized strength for July 1, 1947 of 1.07 million (Sparrow, 1952, p. 256). The Navy and Marine Corps were reduced to 571,000.

<sup>83</sup> Congress had amended the draft law after Pearl Harbor, lengthening the term of service from one year to the “duration plus six months.”

<sup>84</sup> After V-J Day, the Surgeon General’s plans for the contraction of military hospitals in the ZI was based on the rate at which the Army would be demobilized; the time required to treat patients for secondary diagnoses; the number of soldiers that would be found at separation centers to need hospitalization, especially for tuberculosis and deafness, before their discharge from the Army; and delays that the shortage of specialists might

**Figure 8.6**  
**Strength of the Army and the Number and Rate of Discharges Between August 1945 and June 1946**



SOURCE: McMinn and Levin, 1963, p. 14.

RAND MG1164-8.6

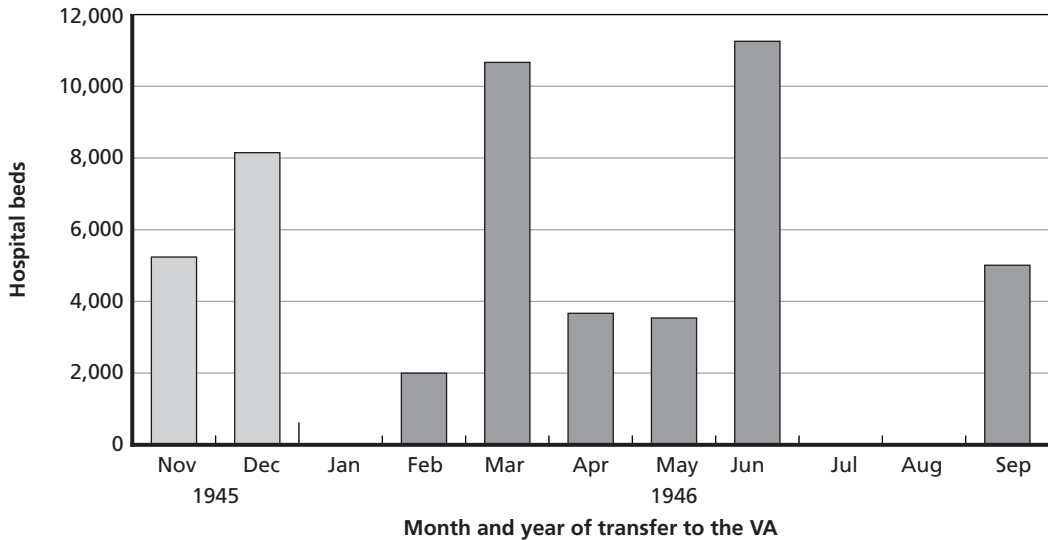
demobilization like all other soldiers, they were also needed to care for the troops in the ZI, to meet the needs of the occupations overseas (including caring for the thousands of displaced persons), and to process the demobilizations of the thousands of soldiers moving through separation centers throughout the country.<sup>85</sup> Between May 1945 and July 1946, the Army released 39,000 physicians. In the next six months, it released an additional 6,050 physicians (McMinn and Levin, 1963, p. 498).

It took about one year for the Army's Medical Department to move from a wartime to a peacetime footing. Figure 8.7 shows the general hospitals that were transferred to the VA between November 1945 and September 1946. In total, 49,742 beds in 25 hospitals were transferred. All but one of the Army's convalescent hospitals was closed by July 1946. Only the convalescent hospital for the blind remained open. By the end of December 1946, all regional hospitals either had been closed or had reverted to station hospitals.<sup>86</sup> By the end of 1946, the Army still had nine general hospitals,

occasion in the disposition of patients already under treatment, particularly plastic surgery and amputation cases. (Smith, 1956, p. 302)

<sup>85</sup> During demobilization, upwards of "2,000 doctors had to be stationed in separation centers to perform the final physical examination so that other troops could be properly released" (McMinn and Levin, 1963, p. 493). For a description of the operation of a separation center, see Sparrow, 1952, pp. 204–222.

<sup>86</sup> According to McMinn and Levin, 1963, p. 314, by "the beginning of 1947 the Army (including the Air Forces) had only 54 station hospitals with 15,715 beds, only 14 general hospitals with 34,846 beds, and only one conva-

**Figure 8.7****Army General Hospital Beds Transferred to the Veterans Administration at the End of World War II**

SOURCE: Smith, 1956, pp. 304–313.

RAND MG1164-8.7

with a total authorized capacity of 28,431 beds. The Army, however, did continue to care for its most disabled officers, under the “maximum degree of recovery” policy, even after the war was over, as the case of Army Second Lieutenant Robert “Bob” Dole—later Senator Dole of Kansas—shows.

### The Case of 2LT Robert Dole

Lieutenant Dole’s case is an example of the World War II system of battlefield care and evacuation and the extended care given the most seriously injured officers even after the war was over.<sup>87</sup> It contrasts sharply with the care that another officer and future U.S. senator, Max Cleland, received 20 years later, during the Vietnam conflict.

On December 14, 1942, 19-year-old University of Kansas freshman Bob Dole joined the Army Reserve Corps. He was inducted into the Army on June 1, 1943. The following summer, he was accepted into Officer Candidate School and, in November 1944, was commissioned a second lieutenant and sent to Italy. In February 1945, he was assigned as platoon leader of the Second Platoon, I Company, 85th Regiment of the 10th Mountain Division. On April 14, 1945, he was severely wounded. He passed

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lescent hospital (Old Farms) with 100 beds.” At the end of June 1945, a total of 212,949 beds were authorized for general and convalescent hospitals, and 51,561 were authorized for stations (McMinn and Levin, 1963, p. 211). The number of beds at stations had thus been reduced by 70 percent, those at general hospitals by 84 percent.

<sup>87</sup> Based on Dole, 2005, and an interview with Senator Dole on April 13, 2009.

through the five-echelon medical evacuation system, finally arriving at an Echelon V hospital in the ZI in Kansas on June 12, 1945. Dole's assignment to Winter General Hospital in Topeka, Kansas, was in keeping with the Army's policy of sending patients to hospitals near their hometowns. Dole received extensive physical rehabilitation at Winter and stayed there until November 10, 1945, when he was transferred to Percy Jones General Hospital in Battle Creek, Michigan. Given that Winter was near his home in Russell, Kansas; that the war was over; and that the Army was demobilizing, Dole might have expected to remain at Winter when the hospital was turned over the VA on November 30, 1945. But the Army was not yet ready to release Bob Dole.<sup>88</sup>

Percy Jones General Hospital was one of the Army's largest major medical centers, including a general hospital, a convalescent hospital, and a number of annexes. While its authorized capacity was 3,414 beds (Smith, 1956, p. 310), it had a population of more than 16,500 by April 1945, including both patients and operating personnel (see Smith, 1956, pp. 198, 276).<sup>89</sup> When Dole arrived, it was the army's main center for paraplegics and amputees. Dole, 2005, p. 193, later recalled: "The hospital was also well known for its rehabilitative work in assisting disabled soldiers in reclaiming their lives." Dole was assigned to Percy Jones for the next two years and eight months, until he was medically retired.

Dole's stay at Percy Jones was longer than it might have been, had he just followed the rehabilitation program the Army laid out for him. In his memoir, Dole recounts how he and the Army came

to loggerheads; it seemed that we had radically different definitions of recovery. My definition was simple: I wanted to be put back together the way my body functioned prior to April 14, 1945. Of course, I recognized I would never be the same. . . . The army had decided that physical therapy was the answer. (Dole, 2005, pp. 232–233)

Dole set out on his own journey, searching for "miracles of modern science and medicine" that could help him. Eventually, this would lead to a private surgeon in Chicago and a number of operations. While the Army did not pay for these private operations—the surgeon waived his fee and his neighbors in Russell, Kansas, paid for the hospital costs—the Army granted him "sick leave" and then provided the postoperative rehabilitation services he needed at Percy Jones.

By spring 1947, both Dole and the doctors at Percy Jones concluded, as noted in his official record, "No further treatment is indicated for this patient" (Dole, 2005, p. 249). Dole summarized the bureaucratic process of getting out of the Army this way:

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<sup>88</sup> The author discussed the circumstances of the transfer with Senator Dole on April 13, 2009. He did not recall any specific reason for his transfer.

<sup>89</sup> Dole reported that, by the time he arrived in November 1945, the hospital center housed more than 11,000 wounded soldiers; it peaked at 11,427 (Dole, 2005, pp. 192–193).



Being honorably discharged from the army for medical reasons is not as simple a matter as one might think. I was examined and reexamined by various doctors, and then both the doctors and I had to go before the official Army Retirement Board at Percy Jones Army Hospital to prove that I qualified for early retirement. It took a lot longer to get out of the army than it did to get in. (Dole, 2005, p. 249)

He had his last physical examination on May 14, 1948, and went before the Army Retirement Board on May 26, 1948. He was officially retired at the rank of captain on July 29, 1948 (Dole, 2005, p. 254).<sup>90</sup> While Dole later received services from the VA (e.g., the use of a Sound Scribe, a precursor of a portable tape recorder, which he used in law school), his medical retirement from the Army gave him options that soldiers who were simply medically discharged did not have, such as access to the military health care system, commissaries, and exchanges. Ironically, in 2007, Senator Dole and former Secretary of the Department of Health and Human Services Donna Shalala cochaired a commission looking at the way disabled soldiers were being treated (Dole and Shalala, 2007). Some of their recommendations concerned the process leading to a medical discharge or retirement, the same process that Dole had gone through 60 years earlier.

## Providing Care for the World War II Veteran

As the United States was preparing for war, President Roosevelt approved a Federal Board of Hospitalization recommendation that members of the armed forces who were injured or incurred disabilities “in line of duty” and whose physical rehabilitation by the Army or Navy was not feasible should be cared for by the VA.<sup>91</sup> However, when war came, the ability of the VA to receive patients was severely limited by a shortage of critical personnel and a lack of facilities.

### The Veterans Administration Goes to War

Within in the first year of the war, about 15 percent of the VA’s physicians, dentists, nurses, and administrators were called to or volunteered for military service. By June 1942, the staffing situation had become so critical that the Department of War agreed not to call up VA doctors who held reserve commissions, and by the December 1943, the Selective Service stopped drafting VA physicians and dentists. These actions were helpful, but it soon became clear that the VA could not handle even the small number

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<sup>90</sup> Dole received two promotions while he was a patient at Percy Jones. These were commonly known as “bedpan promotions,” because they were given to hospital patients. In April 1946, he was promoted to first lieutenant; in February 1947, he was promoted to captain.

<sup>91</sup> To be clear, the policy was to maximize the use of the VA. Neither the Army nor the Navy were prepared to undertake programs of rehabilitation that were not focused on returning a service member to a combat unit.

of disabled veterans that started to arrive from overseas, much less the flood of disabled soldiers that were expected.

The problem was not only the lack of personnel; it was also the lack of facilities. The VA's 91 hospitals had a bed capacity of about 62,000, which was just not enough (Adkins, 1967, p. 149). Converting day rooms and sun porches to wards and adding beds to existing wards just would not do. Moreover, the VA had a "low Federal priority rating" and could not obtain either the labor or materials it needed (Adkins, 1967, p. 167). As a result, a number of newspaper stories appeared with headlines like, "Veterans Hospitals Called Backwaters of Medicine" and "Third Rate Medicine for First Rate Men" (Maisel, 1945). Most notable were an 11-part series by Albert Deutsch in the New York newspaper *PM* and Albert Q. Maisel's two-part series in *Cosmopolitan*, which was later reprised in the more widely read *Reader's Digest*.<sup>92</sup>

### The Veterans Administration During World War II

In early 1944, the Department of War started to assign physicians and dentists to work at the VA.<sup>93</sup> Almost all were recent graduates of wartime military college programs (the Army's Specialized Training Program, the Navy's V-12) who were obligated to serve out two years of active duty. In January 1944, 400 physicians were so assigned. In May 1944, 70 Dental Corps officers were also detailed. By the end of 1944, 1,622 Medical Corps officers and 149 Dental Corps officers had been assigned to the VA (McMinn and Levin, 1963, p. 339).<sup>94</sup>

The relatively minor role that the VA played in the care of American service members during World War II is illustrated in Table 8.13. The table shows the number of World War II patients admitted to VA hospitals from 1942 to 1948, the number of patients returned to the United States from overseas between 1942 and 1945, the number of convalescent beds in Army hospitals at the end of FY 1945, the percentage of VA admissions that were attributable to World War II veterans, and the percentage of beds occupied on June 30, 1945. During the early years of the war (1942–1943), less than 10 percent of VA hospital admissions were recently discharged soldiers. On June 30, 1945, there were 20,774 World War II veterans in VA hospitals—3,045 in tuber-

<sup>92</sup> In 1941, Albert Deutsch began to write a daily column for *PM*. In 1945, his 11-part series criticizing the maltreatment of psychiatric patients in veterans' hospitals led the House Committee on Veterans Affairs to demand the names of his news sources. He refused and was voted in contempt of Congress. Later, the committee rescinded its action, and the VA adopted many of Deutsch's suggestions for improving treatment. The American Newspaper Guild gave him its Heywood Brown Award in 1945 and 1946 for this series of articles.

<sup>93</sup> General Omar Bradley noted that, when he took over the VA on August 15, 1945, "there were then 2,300 full-time doctors in VA, of whom 1,700 were on 'loan' from the Army and Navy" (Bradley and Blair, 1983, p. 457).

<sup>94</sup> If at the time the VA could be considered a "backwater," the same could not be said about military medicine more broadly because

soon after the outbreak of World War II, the Surgeon General had available the cream of the medical profession with which to staff the hospitals of the Army. Outstanding doctors from civilian life were appointed in the Medical Corps by the thousand. (McMinn and Levin, 1963, p. 502)

**Table 8.13**  
**World War II Veterans Admitted to VA Hospitals, Debarked Patients, Convalescent Patients, and VA Hospitals Filled, 1942–1948**

Statistic	FY 1942	FY 1943	FY 1944	FY 1945	FY 1946	FY 1947	FY 1948
Service-connected							
Tuberculosis	451	1,654	3,490	5,382	5,991	10,016	8,487
Neuropsychiatric	295	2,021	5,802	15,508	15,162	14,140	15,463
General medical and/or surgical	86	973	5,686	14,670	28,664	62,328	58,170
Total	832	4,648	14,978	35,560	49,817	86,484	82,120
Non-service connected (number)	743	7,225	49,860	60,454	184,195	294,611	296,324
Number of patients in the ZI							
Debarked	9,248	71,823	101,406	362,282			
In military convalescent hospitals				58,345			
In military general hospitals				152,971			
Total VA Admissions	179,274	160,235	193,789	241,018	346,036	532,881	549,246
World War II veterans admitted during the year (percent)	1	7	33	40	68	72	69
World War II veterans filling beds at the end of the year (percent)	1	9	21	26	39	49	49

SOURCE: Annual Report of the Administrator of Veterans' Affairs for FYs 1942–1948; Smith, 1956, pp. 211, 325.

culosis sanatoriums; 11,090 in psychiatric hospitals; and 5,066 in general and surgical hospitals—compared with 58,345 in Army convalescent hospitals and 152,971 in Army general hospitals.<sup>95</sup>

So, as World War II was ending—Germany had already surrendered, and the battle for Okinawa was coming to an end—the VA was caring for only 9.8 percent of Army's most serious casualties.

### **Increasing Veterans' Benefits During World War II**

Planning for veterans' services commenced almost immediately after the start of World War II. On December 22, 1941, by direction of President Roosevelt, the Federal Security Agency hosted a planning conference attended by the VA and representatives from the War and Navy Departments.<sup>96</sup> A planning committee was established, and draft legislation was ready the following August (1942). Following the World War I model, the original bill linked rehabilitation programs for the "war-disabled" with similar programs for disabled civilians to be run by state boards of vocational rehabilitation. Veterans' organizations objected to what they perceived as "divided authority," as they had after World War I. They wanted the VA to conduct all programs of vocational rehabilitation for disabled veterans.<sup>97</sup>

There were two types of training programs for veterans: first for disabled veterans, then for the larger group of nondisabled veterans when the war was over. The Disabled Veterans' Rehabilitation Act of 1943 was signed into law on March 24, 1943. It granted World War II veterans the same eligibility for benefits that World War I veterans had enjoyed. The new act provided care from the VA for indigent veterans if space was available, regardless of service connection. Vocational training was authorized to start as late as six years after the end of the war. By the end of 1943, 3,000 disabled veterans were in training. By the time the program ended in December 1953, the VA had provided 621,000 disabled World War II veterans with job training.

The second program for World War II veterans went even further. To reduce the possibility of postwar depression brought on by widespread unemployment, the National Resources Planning Board recommended a series of programs for education and training. They argued that this would delay putting the economy under an imme-

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<sup>95</sup> Another 50,078 in were in regional hospitals and 51,561 in station hospitals (Smith, 1956, p. 211).

<sup>96</sup> The Federal Security Agency was an independent agency of the U.S. government, established by the Reorganization Act of 1939. It was a cabinet-level agency that included the Social Security Board, the USPHS, the Food and Drug Administration, the Civilian Conservation Corps, the Office of Education (later the U.S. Department of Education), the National Youth Administration, and a number of other agencies. See Office of War Information, Division of Public Inquiries, 1945, p. 438.

<sup>97</sup> The veterans' association that represented veterans of the regular military establishment, however, preferred the federal-state partnership, thinking that it "provided better for peacetime-disabled servicemen than would legislation favored by the American Legion and the Veterans of Foreign Wars that was concerned with only the wartime disabled" (Obermann, 1965, p. 176).

diate pressure of millions of veterans looking for jobs at the same time. The Servicemen's Readjustment Act of 1944, better known as the G.I. Bill, was signed into law on June 22, 1944. The bill provided for college or vocational education for returning World War II veterans,<sup>98</sup> as well as one year of unemployment compensation and varying types of loans so that veterans could buy homes and start businesses.

## The Postwar Veterans Administration

In the months immediately following the end of the war in Europe, the VA underwent nothing short of a revolution. When Germany surrendered on May 5, 1945, the Army, which included AAF, numbered approximately 8,290,000; when the Japanese signed the formal surrender document on September 2, 1945, the Army was a little smaller, with 8,020,000 men and women on active duty. By the end of December 1945, the Army's strength was down to 4,228,936; by July 1946, it had declined to 1,889,690. By the end of 1947, only 925,163 men and women were in the Army (Sparrow, 1952, p. 265). As the Army numbers came down, the VA's numbers came up. At the end of 1948, the VA counted 18,271,000 "living veterans," approximately 16,051,000 of whom had served in World War II (Gray, 1948, p. 1).

To serve this flood, the VA had 97 hospitals in 45 states and the District of Columbia, with a capacity of 81,133 beds, including 10,243 emergency beds, as reported on June 30, 1945 (Bradley, 1947). To augment this, work was under way on an additional 27,274 beds at 31 new hospitals, with another 29,100 beds in the planning stage. The VA employed approximately 65,000 people. These were the raw numbers that greeted General Bradley when he took over as Administrator of Veteran Affairs on August 15, 1945.

## The Bradley Revolution

Lieutenant General Omar N. Bradley commanded the 12th Army Group during the final days of the war in Europe. Second only to General Dwight Eisenhower in the ETO, he was "devastated" when, on May 17, 1945, General Eisenhower handed him a message from General Marshall that informed him he was being reassigned to Washington, D.C., to serve as the head of the VA:

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<sup>98</sup> The act provided tuition, subsistence, books, supplies, equipment, and counseling services for veterans to continue their educations in school or college. Over the next seven years, approximately 8 million veterans received educational benefits. Under the act, approximately 2,300,000 attended colleges and universities; 3,500,000 received school training; and 3,400,000 received on-the-job training. The number of degrees U.S. colleges and universities awarded more than doubled between 1940 and 1950. In 1945, 4.6 percent of Americans held bachelor's or advanced degrees; that rose to 25 percent within 50 years (National Archives and Records Administration, 2012).

I was reluctant to go to any desk job in Washington before the war with Japan was over, especially one outside the Army and one that seemed on first blush so inconsequential and demeaning. . . . The only job in Washington I wanted was Chief of Staff of the Army. And yet I could not refuse the assignment. . . . [Eisenhower] assured me that he would do everything within his power to see that sooner or later I was named Chief of Staff. (Bradley and Blair, 1983, p. 440)<sup>99</sup>

Bradley eventually made his peace with the new job, telling one reporter,

I don't think there's any job in the country I'd sooner not have nor any job in the world I'd like to do better. For even though it is burdened with problems, it gives me the chance to do something for the men who did so much for us. (Bradley and Blair, 1983, p. 446)

Almost immediately, Bradley made major changes at the VA, which he would later characterize as “radical and revolutionary” (Bradley and Blair, 1983, p. 458). Even before he officially took over the VA, Bradley recruited former members of his old headquarters staff to join him in Washington. He appointed Major General Paul Hawley, former chief surgeon of the ETO, to be his new chief medical director. One month after he was sworn in as administrator, Bradley announced “a sweeping reorganization” (Adkins, 1967, p. 195). Reflecting General Marshall’s 1942 decentralization of the Army order, Bradley created 13 branch offices, each a small-scale version of the VA, led by a deputy administrator with broad decisionmaking powers. Each of these established its own network of regional and contact offices in the outlying smaller cities and towns.<sup>100</sup>

Next, he moved to implement Hawley’s plan to revitalize the VA’s medical staff and programs. Consistent with a plan Bernard Baruch had prepared for President Truman,<sup>101</sup> Hawley focused on creating a professional medical corps independent of Civil Service regulations. He also set up a new advisory board to help guide the VA, established VA hospital affiliations with medical schools, organized physician training programs at VA hospitals, and put a new emphasis on rehabilitation.

### ***An Elite Non–Civil Service VA Medical Corps***

When he came to the VA in September 1945, General Paul Hawley estimated that the VA immediately needed a medical staff of 3,600 physicians, with more to come.

<sup>99</sup> President Harry Truman brokered and guaranteed a deal that allowed General Marshall to retire, to be replaced by General Eisenhower, to be followed by General Bradley, after his service at the VA. See Bradley and Blair, 1983.

<sup>100</sup> This move was “intensely controversial,” given that the VA had traditionally been a highly centralized organization and that even the smallest decision passed through the administrator’s office in Washington. The change would last only as long as Bradley remained at the VA (Bradley and Blair, 1983, p. 450).

<sup>101</sup> The Baruch proposals are discussed in Adkins, 1967, p. 193.

At the time, the Civil Service Commission provided him the names of 80 physicians, arranged by seniority. In his memoir, Bradley recalled that Hawley was “appalled.” With Bradley’s approval, Hawley drafted a bill establishing the VA Department of Medicine and Surgery. The bill provided that

specialists . . . [could] be paid 25 percent more salary up to a ceiling of \$11,000 a year, [and] appointments and promotions [would] be made on recommendation of special VA boards similar, in general, to the Army and Navy selection boards . . . *without regard to civil service regulations.* (Adkins, 1967, p. 213)

The bill passed Congress on December 20, 1945; President Truman signed it into law on January 3, 1946.<sup>102</sup> By the following July, 4,000 full-time physicians were on the VA staff. Figure 8.8 shows the sharp rise in employment during Bradley’s tenure at the VA.

### **Medical School Affiliation**

The second thrust of Hawley’s plan was to speed up hospital construction in conjunction with a new program to affiliate new and existing VA hospitals with medical schools. The affiliation program was the idea of Dr. Paul Magnuson, who joined Hawley at the VA to become chief medical director.<sup>103</sup> Anticipating the end of Civil Service restrictions, Magnuson approached the deans of a number of medical schools, asking them to take over their local VA hospitals. He got results:

The day after P.L. 293 was signed [establishing the separate Veterans Administration Medical Department], Northwestern and the University of Illinois put fifty-six residents at Hines General Hospital without going through Civil Service, and within three weeks of that time the University of Minnesota put in twenty-six at Fort Snelling. (Magnuson, 1960, p. 298)

The medical schools agreed not just because of a sense of patriotism and a sense of obligation to the returning veterans but because of the realities of the postwar medical

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<sup>102</sup>Magnuson, 1960, pp. 289–298, describes the political maneuvering that took place to ensure that President Truman signed the bill.

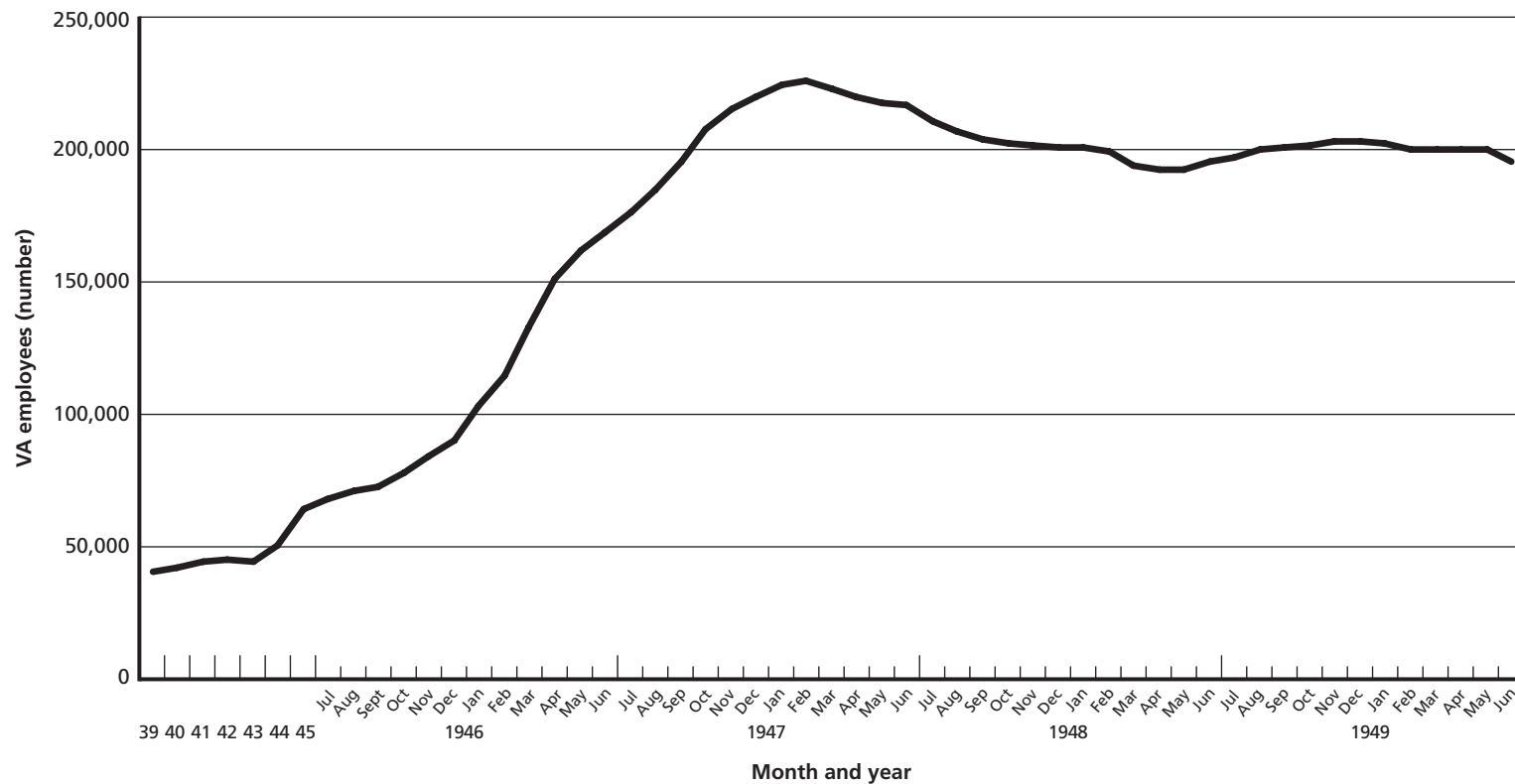
<sup>103</sup>In 1941, at age 57, the Professor of Surgery and head of the Department of Bone and Joint Surgery at Northwestern University Medical School, wrote Edward Hines, Jr., the VA Administrator, with the suggestion that

when the Veterans Administration built or leased or otherwise created new hospitals to meet the tremendous need that was coming, it ought to put them near the established medical schools and make them teaching hospitals . . . [and] arrange to have the deans of the medical schools staff the hospitals, putting the chiefs of service, residents and interns. In this way the Veterans Administration would be drawing on the cream of the civilian medical profession. (Magnuson, 1960, p. 269)

After an initial meeting with Hines, the issue was not acted on, but would become a central feature of the program he introduced to the VA after the war.



**Figure 8.8**  
**Employment at the Veterans Administration: FY 1939 to 1949**



SOURCE: Annual reports of the Administrator of Veterans' Affairs for FYs 1940 to 1949 (FYs end June 30).

RAND MG1164-8.8

labor market, with thousands of doctors being released from the Army and Navy.<sup>104</sup> Because of the new affiliations with medical schools across the nation and because of the new Department of Medicine and Surgery, free from the Civil Service regulations, the VA was able to attract 2,000 young doctors to its residency program.

### ***Hospital Construction***

The affiliation program was off to a good start in cities that had both VA hospitals and medical schools. As the VA started to build new hospitals, it was essential to construct them near medical schools to keep the program going. Previously, VA hospitals were often constructed on federal land in remote areas; now, that would have to change. Changing the construction program was “far more difficult . . . [because] VA hospitals had traditionally fallen into the category of pork barrel legislation” (Bradley and Blair, 1983, p. 460). Bradley soon ran straight into the conventional wisdom that, “politics is the art of the possible” and soon learned the limits of the “fullest support” President Truman had promised him. In his memoir, Bradley wrote that he had

discussed it with Truman in considerable detail. His position was that we could not renege on all the commitments Hines had made. Some had to be honored, otherwise we would run the risk of antagonizing the whole Congress. An angry and aroused Congress might well disapprove or hack to pieces out of spite any new program we proposed. (Bradley and Blair, 1983, p. 461)

During Bradley and Hawley’s tenures as administrators, the number of VA hospitals increased from 97 to 125, with an increase of 20,000 beds. By June 1948, the VA was affiliated with 63 of the 77 class-A medical schools.

### ***Prestigious Advisory Boards***

In addition, Hawley invited the leaders of the medical profession to help the VA as the Board of Consultants to the Medical Service, later changed to the Council of Chief Consultants, with Dr. Charles W. Mayo of the Mayo Clinic as its head. The benefits were striking:

At slight cost to us, they diligently reviewed all VA medical plans, made countless sound suggestions, helped us in our affiliation program with the medical schools and enabled us to attract a wide range of able consultants and specialists. (Bradley and Blair, 1983, p. 461)

### ***Rehabilitation***

In Bradley’s words, the VA was in the past “more prone to warehouse than to rehabilitate wounded or disabled veterans” (Bradley and Blair, 1983, p. 461). Under Hawley’s

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<sup>104</sup>In the three-month period between September and December 1945, the Army alone released 22,000 doctors (McMinn and Levin, 1963, p. 494).

direction, the VA recruited hundreds of occupational therapists and physical therapists, sponsored research leading to new prosthetic appliances and special automobiles for amputees, and partnered with private industry to train and hire disabled veterans. One partner was the Bulova Watch Company, which Bradley joined after retiring from the Army. He eventually rose to become the chairman of its board of directors. Table 8.14 shows the growth of the VA's program for the rehabilitation of disabled veterans under the auspices of Public Law 16. By the start of the Korean War, well over 1.1 million disabled veterans of World War II had applied for training.

**All Good Things Must Come to an End: The VA After Bradley**

During Bradley's stewardship of the VA, the agency had grown precipitously. Between 1945 and 1947, the budget had increased from \$177.6 million to over half a billion; employment at the VA was up from 65,000 to 200,000; and funding for hospital and domiciliary facilities grew from \$17.9 million to \$242.8 million (Gambone, 2005, p. 52). In any event, the VA was a tempting target for congressional budget cutters, and cut they did.

One can speculate on why support for the VA waned: Was it the sniping between Bradley and the head of the American Legion, the most powerful veterans' service organization?<sup>105</sup> Was it Bradley's departure at the end of November 1947 to become Chief of Staff of the Army? Or was it the appointment of Carl R. Gray, Jr., to replace

**Table 8.14**  
**Cumulative Data from Inception of the Disabled Veterans' Rehabilitation Act of 1943 (Public Law 16), from March 1943 to June 1950**

As of	Total Applicants	Training		Rehabilitated <sup>a</sup>	
		Not Deemed Necessary	Approved	Number	Percent
June 30, 1944	23,269	1,888	6,862	69	1.0
June 30, 1945	82,887	5,043	31,887	764	2.4
June 30, 1946	427,019	21,442	204,267	2,659	1.3
June 30, 1947	742,178	42,840	469,653	12,176	2.6
June 30, 1948	916,101	59,589	607,057	43,713	7.2
June 30, 1949	1,049,106	78,333	690,920	119,598	17.3
June 30, 1950	1,131,222	97,932	741,892	204,031	27.5

SOURCE: (Gray, 1951, p. 224).

<sup>a</sup> Defined as having completed necessary training.

<sup>105</sup> Bradley was criticized for a variety of things, including his selection of hospital sites, for delays in processing claims, and for not utilizing more Army and Navy facilities. See Adkins, 1967, pp. 196–201.

him as administrator?<sup>106</sup> Was it Gray's decision to roll back the reforms Bradley had put in place and Hawley's speedy departure from the VA?<sup>107</sup> Or was it the political times, with the change in the control of Congress and the general cutback in government programs? Regardless of the reason as early as February 1947, the VA was forced to institute a hiring freeze and to curtail all but essential travel. By 1949, it had also cut back the ambitious hospital construction program. The 1948 program Bradley and Hawley had put together called for the construction of 90 new hospitals with a capacity of 152,000 beds. The new program eliminated 16,000 beds and cancelled 24 hospitals. Plans for other hospitals were scaled back. Given shrinking budgets, hospital cutbacks, and Gray's rollback of the Bradley-Hawley program, physicians began to resign. By one account, on the eve of the Korean War, "more than four thousand authorized beds, the equivalent of sixteen average-sized hospitals, would not be used because the staffs needed to maintain them were unavailable" (Gambone, 2005, p. 468).

Arguably, the best indication of the changes that took place at the VA after Bradley's departure was the stormy relations between Gray and Magnuson. Gray wanted to limit the medical director's authority to "professional matters pertaining to the treatment of patients" (Adkins, 1967, p. 228). Magnuson felt that everything in a hospital affected the care of patients and, therefore, should be under the chief medical director's purview. On January 14, 1951, after a "stormy confrontation," Magnuson left the VA.<sup>108</sup>

The VA was eventually reorganized along the lines Magnuson favored, with hospitals, clinics, and veterans' homes reporting to and through the chief medical director. On June 30, 1953, the day Administrator Gray resigned, the VA's functional organizational structure was replaced with a mission-oriented structure; the 16 administrative divisions that had been in place since 1930 were replaced with three departments. In addition to the Department of Medicine and Surgery, headed by the chief medical director, there were now the Department of Benefits and the Department of Insurance. This new structure would have its own consequences in the years ahead.

<sup>106</sup>In his memoirs, Bradley wrote,

I thought Gray was a poor choice. I had known Gray in Africa and Europe . . . Upon learning that Gray was Truman's choice, Hawley, who also knew Gray, made plans to leave the VA when I did. He became chief executive officer of the National Blue Cross–Blue Shield medical plans. (Bradley and Blair, 1983, p. 468)

<sup>107</sup>Gray turned the clock back. He

restored the centralized VA bureaucracy . . . [and] priority for hospital construction and facilities purchases again passed to the congressional pork barrel. Gray himself was forced out as VA administrator after a Senate investigation . . . revealed a familiar story of politicization and bureaucratic incompetence. (Gambone, 2005, p. 55)

<sup>108</sup>Adkins, 1967, pp. 227–241, discusses the confrontation between Gray and Magnuson in detail. Gray announced that Magnuson had resigned. Magnuson quickly told the press, "Hell no! . . . I didn't resign, I was fired!" (Magnuson, 1960, p. 345).

## The Legacy of World War II

A much-overused word today is *transformation*, so much so that the advocates of any change feel that they must describe it as *transformational* for it to have any credence. But *transformation* implies much more than just change. Merriam Webster's *New Collegiate Dictionary* suggests that, to be transformational, the change must be "a major change in form, nature, or function." In our nation's history, there have been only three transformational events: the Revolution, the Civil War, and World War II.

On every front and in every dimension—social, political, economic, military, and technological—World War II transformed America and the world. Volumes have been written on the effects the GI Bill, which provided housing and education for the millions of returning veterans, had on American society. The United States expanded its political role radically in the decades after the war, and the military of today is many times the size of the American military establishment before World War II.

In terms of the casualties of war, World War II was the catalyst for the transformation of the pharmaceutical industry, the development of the modern air transportation system, the introduction of the helicopter, and even the medical field of psychiatry. World War II left the United States with a large standing Army, and that required a larger, more-professional military medical establishment than had existed in previous postwar periods. It also left a revolutionized VA system. The ultimate legacy of World War II, however, is how, in the future, military medicine and the care given the physical and psychological casualties of war would change, which is the subject of Volume II.



## **Summary: What Happened?—What Have We Learned?—How Did We Get Here?**

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The accounts presented in the previous chapters have shown that the level of care today's casualties of war receive is relatively new in human history, dating back less than a century. From the time of the Greeks to World War I, just being a soldier was an open invitation to death from the countless communicable diseases that were the scourge of military camps. For the wounded, the inability to control infections meant that simple wounds often turned into festering sores, often with deadly results. Moreover, the difficulties of organizing medical services and evacuating the wounded from the battlefield added to the misery and undoubtedly increased the loss of life. For the survivors, care for the disabled veteran was at best no more than some cash compensation—payments to U.S. veterans have been very generous compared to those of other nations—and, as a last resort, a place in a veterans' asylum for the indigent. World War I changed all this, with the introduction of widely available rehabilitative services.

The changes brought about during World War I were remarkable both because they were built so firmly on the steady evolution of medical care soldiers had received through time and, at the same time, because they broke with what had gone before in significant ways. Over time, the role the state played in the care of sick and wounded soldiers and disabled veterans had steadily increased, but little had suggested the range of services the state would provide to veterans by the end of the war and afterward. Starting in World War I, society has changed how it views the disabled, and rehabilitative services are now being provided along with education and training to ease the transition back to civilian life for both disabled and nondisabled veterans. This change is further reflected today in the Americans with Disabilities Act and the conviction of Congress "that physical and mental disabilities in no way [should] diminish a person's right to fully participate in all aspects of society."

This chapter explores four broad themes, evident throughout history, that define the quality of care a wounded soldier would receive: (1) the nature of combat itself, the kind of wounds received and the ability of physicians and surgeons to deal with disease and the consequences of wounds; (2) the ability to deliver medical services on and, later, off the battlefield; (3) the increasing role of national governments in providing care—



financial, domestic, and rehabilitative—to veterans after the battle; and (4) finally, the more-recent awareness of psychological and cognitive injuries—the so-called invisible wounds of war—that transcend the immediate battle. These trends began in antiquity and follow through the end of World War II—the timeframe covered in this volume—and continue to the present day.

## **Nature of Combat, the Wounds Received, and the Ability of Physicians and Surgeons to Deal with Disease and the Consequences of Wounds**

The first broad theme from history is the interplay between the nature of combat itself, the kinds of wounds received, and the ability of physicians and surgeons to deal with disease and the consequences of wounds (bleeding, shock, and infection). Prior to the Renaissance, military combat involved men fighting each other at close quarters with rocks, knives, swords, and arrows. Wounds were generally inflicted as one soldier crushed, cut, or slashed at another. It was a period that the military historian Trevor Dupuy has called “the Age of Muscle.” The mass casualties of later wars were unknown, awaiting the introduction of gunpowder during the late Middle Ages.

### **The Ancient World**

In ancient times, with the exception of the expeditionary armies of Alexander the Great (336–323 B.C.) and Rome during the later years of the Republic and the Imperial period (3rd century B.C.–4th century A.D.), battles were most often fought close to home by citizen soldiers pressed into military service for the defense of the community or to engage in limited offensive actions for short periods. Their skills as soldiers were limited, and the damage that could be done was also limited, unless panic set in, with those who fled being left to the mercy of the winning side. Given the poor state of medical knowledge, most wounds from spears and swords were fatal. An analysis of the ancient text of the *Iliad* shows that only arrow wounds had a mortality rate of less than 50 percent. As a result, those who could extract an arrow with skill were much valued.

In the most ancient of times, care for wounded soldiers was the purview of priests, who tried to explain the mysteries of sickness and death as matters in the hands of the gods. If the soldier survived, friends and family provided his care. It was the Greeks, and later the Romans, who freed medicine from religious restrictions and allowed empirical medicine to develop. Unfortunately, without knowledge of anatomy and basic science, their reasoning often led down disastrous paths, as was the case with their misunderstanding of the healing process and the use of bleeding and purging. The Greeks and Romans had the lethally wrong notion of the value of infection and of “laudable pus” as an indication of natural healing. After the fall of Rome, the care of wounded soldiers regressed as the Catholic Church dictated medical doctrine. Empiri-

cally based medical care would not again take hold until the rise of the nation-state in the 17th century, when military medicine could again achieve the level of sophistication and quality of care imperial Rome provided its soldiers.

The zenith of medical care in the ancient world came during the Roman Empire. While the Greeks invented the tourniquet to stop bleeding, it was the Romans who finally learned how to control bleeding once the tourniquet was removed. While neither the Greeks nor the Romans knew how to control infections, they both washed wounds with wine and vinegar, which contained natural bactericides and were more-effective antiseptics than what Joseph Lister used in 1865. In total, however, the legacy from the ancient world was not positive. Acceptance of the teachings of the Roman physician Galen about the cause and treatment of infection caused countless deaths. These teachings dominated modalities for wounds until the end of the 19th century.

### **After Rome**

After the fall of Rome, Western Europe receded from the well-ordered structure and discipline of the Romans, replacing it with the feudal system of obligations between the lord and vassal. The care a soldier received was equal to his station in life; feudal lords cared for their knights, and monasteries cared for the poor and ordinary soldier. One historian summed it up this way: The common soldier

received little medical attention in war—"he was brought to be sacrificed, he was used while in health and when sick or wounded left to die." . . . The scope of the military surgeon was limited by the policy of discharging soldiers who were unfit rather than treating them . . . [and was] based upon the cynical though economic fact that it cost more to cure a soldier than levy a recruit. What medical attention there was available was devoted to the treatment of the nobles and knights. (Cantlie, 1974b, p. 10)

The Crusades, starting in 1096, have been described as "undisciplined caravans," rather than coherent military forces. The tactics used and the wounds and care a soldier received could easily be described in Homeric terms. Unsanitary conditions allowed dysentery, fever, and typhus to run wild, with most soldiers dying even before they entered battle. At best, the treatment of wounds were reminiscent of Roman times: pressure on the wound, cauterization of arteries, and washing with wine and vinegar. By the late Middle Ages, however, some dared to challenge the orthodoxies of the Church. Theories were put forth suggesting that pus was not essential for the healing of wounds, but these notions were generally ignored. The laudable pus theory persisted to the great detriment of the wounded until Louis Pasteur finally debunked it in the later part of the 19th century, some six centuries later—less than 150 years ago.

The Renaissance profoundly changed the nature of war. First, it saw the rise of nation-states and the professionalization of armies. Second, the introduction of gunpowder allowed the use of small arms and artillery and the development of new

tactics—all of which increased the severity of battle injuries. Devastatingly gruesome gunshot wounds, often resulting in shattered and compound fractures and amputations, replaced simple, clean cuts. It became common practice to cauterize all wounds, although the ligature of arteries and the use of turpentine, which had antiseptic properties, were also used. An early version of the modern hemostat made the amputation of the larger limbs a more acceptable procedure. The signature wound of this “age of gunpowder” became an amputated limb. With other wounds, a soldier either got better or died. Improved survival through amputation, however, meant that a steady stream of crippled veterans who were largely unemployable became a legacy of war long after the battles were over.

### In America

In the British colonies of North America, the medical treatment and care the wounded received reflected the English practices of the time. A series of wars with France, starting in 1688 and carried to the colonies during the French and Indian War (1756–1763), made North America the training ground for colonial officers who took up arms against the mother country in 1775. However, the tactics used on the frontier proved of little value in set battles against formations of British regulars during the Revolution. Suffering defeat after defeat in New York and Pennsylvania in 1776 and 1777, it was during the harsh winter at Valley Forge (1777–1778) that Baron Von Steuben, a Prussian, finally taught the Continental Army the art of 18th-century warfare.

The tactics of the era sought to blast opponents off the battlefield with concentrated musket fire from files of troops. It was not the individual soldier who mattered, but the integrity of the line and how well the line stood after receiving a volley. But holding the line in the face of musket volleys was only part of what made for a disciplined force; the ability to withstand an assault by an enemy with the “terror weapon” of the 18th century, the bayonet, was critical, and it was not until 1779 that American units demonstrated that capability.

During the Revolution, actual battles were short and relatively infrequent, and soldiers spent most of their time in camp or maneuvering from one location to another. The American soldier had more to fear from camp life or being captured by the British than from the wounds of battle. Poor camp sanitation and the resulting disease accounted for 90 percent of all deaths, but things were not much better in the British camps, where 84 percent of deaths resulted from such diseases as typhus, typhoid fever, and malaria. Smallpox, which the Virginia Governor, Patrick Henry, described as “more destructive to an Army in the Natural way, than the Enemy’s Swords” (as quoted in Gillett, 1981, p. 75), was largely controlled on the American side by a program of inoculation in 1777 and 1778 that General Washington had ordered.

Despite the enlightened inoculation program, the care given soldiers was largely ineffective. According to the leading medical authorities of the time, the standard care for all kinds of ailments was bloodletting, sweating, emetics, laxatives, and enemata.

Surgeons took the lack of swelling and the absence of pus as bad signs that a wound was not healing. Given such medical treatments, it is no wonder that gunshot wounds to the torso most often got infected, leading to death, and that wounds to the extremities and fractures, particularly compound fractures, usually resulted in amputation, with mortality rates as high as 65 percent. Those who survived the loss of a limb were disabled for life and were dealt with accordingly.

As deadly as disease had been during the Revolution, the Mexican War, fought between 1846 and 1848, was the deadliest ever fought by an American army. While the Regular Army did most of the fighting and sustained battle casualties twice as high as the volunteers, the death rate from disease was twice as high for the volunteers as for the Regular Army. The volunteer camps were described as “sink-holes of filth and squallor” (Irey, 1972, p. 286), with many dying from malaria, measles, mumps, dysentery, and diarrhea. That description could have also been used to describe the conditions in the Union camps outside Washington in the early days of the Civil War.

The American Civil War (1861–1865) was the first total war of the industrial age, and conflict became more deadly. On the eve of the war, the Regular Army numbered about 15,000 officers and men. By the time the war was over, 2.3 million men had served the Union, and as many as 1 million men wore the gray uniforms of the Confederacy. It has been estimated that one in ten Union soldiers died or were incapacitated, one in four for the Confederacy. During the Revolution, 90 percent of all deaths were from disease, compared with only 61 percent during the Civil War. These statistics do not reflect a sudden improvement in the treatment of disease, although there was a new focus on camp sanitation, so much as the nature of the conflict. During the Civil War, the mortality rate from disease in the Union Army was twice that of a similar group of men during peacetime. Some have argued that the high casualties were the direct result of using tactics most suitable for smoothbore muskets even though the armies had shifted to the more-deadly rifled muskets, breach-loading rifles, and machine (Gatling) guns. Others point to the different scale of operations, in which steamships and railroads made long-range, wide-scale campaign possible and in which the soldiers fought in battles that were often only days apart.

The use of chloroform and ether to provide “pain-free” surgery was widespread, but surgeons still could not control infection and were ignorant of how it spread in hospitals. The vast majority of wounds Union soldiers suffered were from the minié ball, which shattered bone and crushed soft tissues, carrying bacteria-laden bits of clothing and other debris into the wound. The death rate from wounds to the chest or abdomen was as high as 87 percent. But the most common wounds were to the extremities, often resulting in amputations—the hallmark wound of the Civil War. The average mortality rate for amputations of the lower extremities was 40 percent, but almost 21,000 amputees survived the war—12.1 percent of all wounded Union soldiers were amputation survivors. In 1862, Congress authorized the Army Medical Department to issue artificial limbs, making America the world leader in the field of prosthetics. Up

until then, the provision of a prosthetic was a private matter, with surgeons selecting the particular amputation technique based upon the economic status of the patient. The amputation a poor person got was appropriate for the peg leg he or his family could afford. A rich person's amputation was appropriate for the articulated prosthesis he or his family could buy.

Union Surgeon General William A. Hammond once noted that the Civil War was fought at the "end of the medical middle ages" (Faust, 2008, p. 4). Just two years after the war's end, Joseph Lister demonstrated the benefits of carbolic acid spray as an antiseptic, yielding a corresponding two-thirds reduction in the death rate from amputations. However, it would be another 50 years before the use of antiseptics would become standard practice in the U.S. Army.

The official postwar assessment after the Spanish-American War was that, when the war started in 1898, the Army's Medical Department had lacked the plans, personnel, equipment, and effective doctrine necessary to support an army in the field. As a result, disease ravaged the troops in the United States and overseas. Actual casualty rates were low, with more soldiers dying from nonbattle causes than the total battle casualties, combat dead and wounded combined. This war, however, provided the impetus for major change.

When the United States entered World War I in 1916, the war had been going on for almost three very bloody years of stalemate. During those years, observers were dispatched who returned with lessons from the European experience. Together with the national preparedness movement, these lessons meant that the Army's medical establishment was better prepared for this war than for any in our history. And preparations came none too soon, because the lethality of the modern battlefield greatly increased during World War I, resulting in millions of casualties. By the beginning of the 20th century, many new inventions had revolutionized military communication, transportation, and combat vehicles. The new terror weapon was the machine gun. The increased lethality of artillery made the linear tactics of the 19th century obsolete. This was also a war of stalemate. Despite the advances in technology, neither side could gain an advantage as casualties mounted. What the Americans brought to the war in 1917 was not new technology or new tactics or great generalship but fresh troops, and that proved to turn the tide of battle.

Between April 1917 and Armistice Day, November 11, 1918, the Army increased from fewer than 200,000 to over 3.5 million men. The first troops arrived in Europe in July 1917; by the time hostilities ceased, almost 2 million men were overseas. What is generally not appreciated is that most American casualties occurred over about 100 days, between August 1918 and November 1918. Reflecting the mobility of American troops during the final campaign, most American battle injuries resulted from gunshots, not gas or artillery, which was very different from the experiences of the other allies, who had fought years of trench warfare.

As late as the Spanish-American War of 1898, nonbattle deaths had far exceeded combat casualties or deaths at the hands of the enemy. During World War I, the survival rate rose sharply as those wounded in action received medical care that limited infections. The Army's vaccination program had largely eliminated typhus. If it were not for the great influenza epidemic of 1918, World War I would stand out as the first great conflict in which noncombat deaths lagged substantially behind battlefield deaths and casualties.

For the United States, the story of World War I is the story of a European conflict. By contrast, World War II was a truly global conflict of enormous magnitude. Where the U.S. Army of World War I grew to about 3.5 million men, the U.S. Army of World War II peaked at over 8 million men, with an additional 4 million in the other armed services. In total, 16 million Americans served during World War II. This was total mobilization, with over 60 percent of the men of military age—those between 18 and 36 years of age—in uniform. After the initial defeats of American forces in the Philippines and on a handful of Pacific Islands, American forces were generally on the offensive, and combat centered on small infantry units supported by armor, artillery, and effective close air support aircraft.

For the American medical establishment, World War II required a new way of doing business; decentralization was the guiding principle for the organization of military medicine. World War II was fought with the lowest overall death rate in the history of the U.S. Army, although this statement hides the lethality of combat. For those in combat units, casualty rates remained high and would have been higher if not for the advances in medical care made during the war, such as the use of blood plasma and whole blood, antibiotics (sulfa drugs and penicillin), and improvements in the chain of evacuations that standardized care and moved patients quickly to higher echelons so that they might receive the best care possible. As a result, the death rate for those wounded who reached hospitals was half that of World War I. World War II also produced five times the neuropsychiatric casualties of World War I, foretelling issues for later wars.

## **Organization of Medical Services on and off the Battlefield**

The second broad theme from history is the effectiveness of medical logistics, both the organization of medical services within the military and care provided to soldiers on the battlefield. What started as rather haphazard organization of medical care for the military has grown into military medical departments as sophisticated as any civilian health care organization.



### The Ancient World

The most detailed recounting of medical logistics in the early Grecian period is from Homer's *Iliad*. Whether real or legend, the tales rang true and were accepted in the ancient world. The care of the wounded depicted suggests that care was not provided by the state but left in the hands of individual warriors and their servants, a pattern that has been repeated throughout history. More generally, campaigns between city-states were usually fought near home, and care from family and friends was readily available. The campaigns of Alexander the Great stand in sharp contrast. They were fought thousands of miles from home, making it particularly difficult to replace Greek soldiers lost to disease or in battle. That placed a premium on keeping the army as healthy as possible and caring for the sick and wounded so that they could return to the ranks. Alexander used wagons as ambulances, and some have credited him with organizing the first military medical corps in any Western army, albeit small by today's standards or even the standards of the Imperial Roman army, only three centuries later.

Originally, the Roman army was a citizen force on the model of the Greeks. The care of wounded had not progressed beyond the care Homer described. On the march, Roman armies customarily took their wounded with them, and it was a generally accepted obligation of the wealthy to open their homes to care for the wounded. A professional army started to take hold with Roman expansion, starting in the 3rd century B.C. However, the individual armies politician-commanders raised had no medical corps per se, and medical care was haphazard, depending greatly on the largess of the general. Informally, a de facto medical service developed when soldiers started specializing in the healing arts.

Augustus established the first unified Roman army and, with it, a formal medical corps. The army provided a range of medical capabilities that were unique in the ancient world. It established its own medical training program and standardized care based on its own medical manuals. The medical unit included animals and vehicles for transporting patients and supplies. Roman military forts had hospitals for the treatment and recuperation of sick and wounded soldiers and were designed to accommodate upwards of 10 percent of the legion's personnel, with remote hospitals on the frontier being larger.

The care a Roman soldier received was strikingly different from that available to the average Roman citizen. A number of scholars have concluded that the quality and effectiveness of Roman military medicine were generally not surpassed until at least the 17th century—some would say 18th century—and in some areas, the same care a soldier received during World War I can be found in Roman medical guides of the 1st century A.D. The general competency of military medical staff is suggested by the surgical instruments excavated from the ruins of Roman military hospitals and the fact that, after leaving the army, they were valued as civilian physicians.



## After Rome

During the early Middle Ages, care on and off the battlefield most often fell to the clergy, where the imposition of religious doctrine impeded the quality of care received. The sharp division of the medical profession into the domains of physicians and surgeons can be traced to the 12th century, when the Catholic Church forbade the clergy to shed blood. Priests and monks continued to practice medicine, and surgery was relegated to their former lay assistants, whose primary duty was shaving the monks' heads with sharp blades—thus arose the lower-status profession of the barber-surgeon.

During the First Crusade (1096–1099), there is no evidence that the armies systematically provided for their wounded, but it is likely the wounded were taken to the nearest friendly town for care. After the fall of Jerusalem in 1098, various knightly orders established hospices to care for sick and wounded soldiers, as well as for pilgrims destined for the Holy Land. These were the forerunners of today's modern hospitals.

As power in Europe became centralized under a few national leaders, armies developed, and attention was given to the care of the troops, particularly the valuable professional troops. The first account of a mobile hospital set up in tents dates to 1180. During the Third Crusade (1189–1192), Emperor Frederick of Germany provided transportation for the sick. The chronicler of the battle of Alona in Spain in 1484 tells us that Queen Isabella established the Queen's Hospital: "six large tents and their furniture, together with physicians, surgeons, medicines and attendants; and commanded that they should charge nothing, for she would pay for all" (Garrison, 1922, p. 95). Charles V, her grandson, carried through her benevolent care for his soldiers; surgeons who were "skilled, experienced, and trained" were assigned to each troop (Lynch, Weed, and McAfee, 1923, p. 27).

In France in 1550, Henri II created "ambulant hospitals" (from which the word *ambulance* is derived), which followed the movements of troops and triaged the wounded to fixed hospitals. In 1708, Louis XIV (1638–1715) established the French Medical Corps, with 200 physicians and surgeons, and constructed 51 military hospitals across France. Later, in 1794, military teaching hospitals were created to provide medical personnel to the army. Pierre-Francois Percy and Dominique-Jean Larrey, senior medical officers in Napoleon's army, made significant improvements in how war casualties were cared for on the battlefield, particularly by introducing a mobile ambulance corps for evacuating the wounded.

The English Army, during the reign of Henry VIII (1509–1547), regularly employed surgeons to care for the wounded. Some of these were provided by a guild known as the Company of Barber-Surgeons of London as a condition of its royal charter. Captains of troop companies were also authorized to recruit their own surgeons. However, the critical evacuation problem was not addressed, which increased the loss of life and depleted the ranks of fighting men as they carried their comrades to safety. A century later, during the English Civil War, the Royalists left their wounded on the battlefield in the hope that they would receive "humane treatment" at the hands of

their enemies. In contrast, the New Model Army of the Commonwealth included a physician general, a surgeon general, and an apothecary general, and one surgeon was authorized for each company of troops. While Parliament provided some medicines, the surgeons provided the liniments, ointments, and battle dressings, with the troops themselves ultimately bearing the cost. In addition, given the large number of wounded, central hospitals were established in London and Dublin and in Scotland to relieve the burden on regimental hospitals.

By the end of the 17th century, military medicine had become a definite function of government, with two competing views of how to care for the wounded. These centered on the roles of general and regimental hospitals—a conflict that carried over to America and was not resolved until the Civil War. Peacetime general hospitals were built in central locations. During a war, as the army increased in size and deployed overseas, the general hospitals provided the staff to form new central hospitals that accompanied the troops to large garrison towns. The general hospitals were staffed with elite physicians who had trained at Oxford or Cambridge but who frequently lacked military experience.

Routine care and the immediate care of battle casualties were the responsibilities of the regimental surgeon and hospitals. The medical officers assigned to each regiment were generally not university graduates, having apprenticed with a physician or surgeon, and received commensurately low pay. They were often poorly treated because, while they held a commission from the King, they did not hold the social position usually associated with such commissions. Medical mates who supported the regimental surgeons had even less training and received lower pay. Efforts to improve the qualifications of regimental medical staff were frustrated by the poor rates of pay, which, by one account, were only one-quarter of what a civilian physician might make. It was at this time that care from professional female attendants, not “camp followers,” was routinized.

Conditions along this medical chain or echelon were variable and uncertain. The policy was to evacuate the sick to general hospitals as soon as possible, which often led to overcrowding and the spread of epidemic disease. The alternative of keeping the wounded in regimental hospitals fared little better because these were often nothing more than sheds or barns. Moreover, transporting the wounded from the battlefield was always a problem, even for the winning side. As a result, in 1743, Britain and her allies concluded a treaty with France to regulate the care of the wounded that foreshadowed the Geneva Conventions of the next century.

No country entered the 19th century with an adequate military medical system, but most were transformed by the end of the century. The impetus for change was the horrid performance of the French and British military medical systems during the Crimean War and the advances of the Americans during the Civil War and the Germans during the Franco-Prussian War of 1870.

In Britain, while the army largely ignored the age of reform (1780–1850), important changes to the provision of medical care did occur, including the commissioning of physicians from a wider range of British universities; making promotions on the basis of knowledge and ability rather than seniority or patronage; establishing fixed time-in-grade requirements for promotion; increasing pay; recognizing the military nature of medical service by awarding military decorations to medical officers; and establishing a system of medical reporting that provided data for a study of the mortality of soldiers living in military barracks. These data, which showed a mortality rate for soldiers higher than that for the general population, were used to convince the government that money spent in bettering the soldiers' health could save lives. Even with these advances, the army's Medical Department was unprepared for the realities of modern warfare, which came in 1854 with the Crimean War. Following an all-too-familiar trend, disease accounted for over 90 percent of all deaths. Progress, however, was made with the dispatch of a corps of female nurses under the direction of Florence Nightingale and the establishment of the civilian Sanitary Commission, which had the authority to impose changes on the military.

Finally, in 1873—a decade after the American Civil War and three years after the Franco-Prussian War—the regimental hospital was abolished, and a modern organization of battlefield care was developed that provided bearer companies, movable field hospitals, stationary hospitals, general hospitals, sanitary detachments, depot medical stores, and hospital ships. In 1877, medical officers were finally given the power to command their own staff and patients. In 1878, the pay, privileges, and rank of medical officers were brought into line with the rest of the army. In 1879, a medical reserve corps was established. The new system was tested and adjusted during the first and second Boer Wars (1880–1881 and 1899–1902) in South Africa. With the exception of the failure to fully appreciate the value of inoculation against disease and the need to vaccinate the force, these changes provided an efficient medical organization that was in place at the outbreak of World War I.

The last of the great powers to reform, and then only partially so, was France. It was not until 1889 that France established an autonomous military medical service, but even then, the medical staff was not seen as a core component of a war-fighting staff. In the early days of World War I, the chief surgeon of the French Army complained of a lack of personnel, the poor technical competence of the staff, and his inability to coordinate with the general staff during the flow of battle.

### **In America**

During the Revolutionary War, wounded soldiers were cared for by an evolving array of treatment facilities that were often in open conflict with one another, usually over bureaucratic issues, particularly the tension between general and regimental hospitals. The argument in favor of the general hospital was the need to address the often-poor qualifications of regimental surgeons and their mates and the observation that a single

general hospital was cheaper to run than a collection of regimental hospitals. The argument in favor of the regimental hospital was that it kept patients close to their comrades and, because such hospitals were dispersed, lessened the effects of epidemics, which infected more in larger hospitals.

The pattern of conflict after the Revolution followed a common path. During crises, the small Regular Army was augmented by equally ill-prepared volunteers and militias from the states. The medical establishment that supported the Regular Army in peacetime, now responsible for medical care of its own force and what was needed to support the regimental surgeons of the volunteers and militia, was equally unprepared. At the start of the War of 1812, nine months elapsed before Congress even reestablished the posts of Physician and Surgeon General and Apothecary General. Quite predictably, there was friction between the regimental surgeons and the medical staff of the Regular Army.

Even with the establishment of a permanent peacetime Medical Department in 1818, the Army was unprepared to support the initial medical needs at the onset of the Mexican War in 1848, resulting in great loss of life, mainly to disease.

While some improvements followed the Mexican War, the Medical Department still could not cope with the evacuation of the wounded from the battlefield, and no plans existed for the care of mass casualties. Unprepared even for a minor war, the Army Medical Department was overwhelmed in the earliest months of the Civil War.

The names of the Surgeon General, Dr. William A. Hammond; the Medical Director of the Army of the Potomac, Dr. Jonathan Letterman; and the Sanitary Commission will forever be linked to the innovations that transformed military medicine during the Civil War. Medical advances were made steadily over the course of the war; as a result, by the end of hostilities, the new system of battlefield care and evacuation by ambulances, trains, and ships had become the prototype for battlefield medicine for the great wars of the 20th century. The focus of care shifted from the regimental hospitals to large-scale military hospitals constructed in major cities and accessible by rail. By the end of the war, the Union operated 192 general hospitals with a total capacity of over 118,000 beds, some with more than 3,000 beds. Notable was the increase in trained women nurses, who transformed the delivery of care both during the war and after. Their value had become so indispensable that, within a decade, a permanent nursing school was established in New York City.

Convalescent Camps were also established to receive men from the hospital who no longer needed medical treatment but who were not well enough to return to their units for active service. Soldiers remained in these camps until they regained their strength or were discharged from the service. Today, the Army's Warrior Transition Units perform essentially the same function that the Convalescent Camps performed during the Civil War.

Unfortunately, many of the advances made during the Civil War were short lived in the American Army. Following the war, the general hospitals and the Hospital

Transports and Ambulance Corps were dispensed with, and the medical supplies were sold. After Reconstruction, the Regular Army's strength decreased to 25,000 soldiers, who mainly served at small posts in the west. Despite the quiescence of the period, there were several notable advances, including establishment of the Hospital Corps (1887) and the Army Medical School (1893).

These changes were significant, serving as a basis for the professionalization of the Medical Department, but when the Spanish-American War started, the Army Medical Department lacked the plans, personnel, equipment, and doctrine necessary to support an army in the field. After the war, the Dodge Commission, appointed by President McKinley, investigated the conduct of the war, concluding that the performance of the Army Medical Department had been a fiasco.

Reforms by Secretary of War Elihu Root followed, including creation of the Nurse Corps in 1901; new regulations in 1904 that addressed the assignment of medical personnel and the allocation of ambulance companies and field hospitals; and new medical manuals that laid out a system to move the casualties from the battlefield, to battalion aid stations, to field hospitals, and then to permanent hospitals. The new system was tested in field maneuvers in 1910 and 1913. In 1916, the deployment of medical units to support General Pershing's campaign along the Mexican border was a precursor of the deployments to Europe that were to come.

The Medical Department was reorganized in 1908, and Congress authorized the Medical Reserve Corps, the forerunner of the entire Army Reserve System. When war came in 1916, the Reserve and National Guard provided a mechanism for commissioning applicants without resorting to contract surgeons, as had been necessary in the Spanish-American War. A separate reserve corps for nurses was organized in 1912, as the American Red Cross Nursing Service. On the eve of World War I, 8,000 had registered. Eventually, the Red Cross provided the Army with more than 20,000 nurses. The final transformation of the Army Medical Department took place with the National Defense Act of 1916.

At the start of World War I, the Medical Department dispatched observers to Europe. When the United States finally entered the war, important lessons had already been learned concerning military hospitals, care for the neuropsychiatrically wounded, amputations, and rehabilitation, making the Army Medical Department better prepared than it had been for any previous war. Nevertheless, to meet this challenge, it had to grow very quickly. While the Army increased in size by a factor of 19, the medical services increased 131-fold. In March 1917, the Army had approximately 3,000 medical personnel; by November 1917, that number had grown to 394,000. At the time of the Armistice, 27 percent of all physicians in America were in uniform.

On the battlefield during World War I, the wounded benefited from two innovations in the movement of casualties: the motorized ambulance and the widespread use of hospital trains. The care the wounded received incorporated new advances in medicine and new battlefield techniques for limiting infections and took place in well-

staffed general and specialized hospitals. The centerpiece of medical support was the division hospital. The average time it took to evacuate the wounded to a field hospital now was measured in hours, not days.

To care for returning war wounded, the Army built hospitals at debarkation points and in local draft districts. Special facilities were fashioned for patients with tuberculosis; psychiatric conditions; and orthopedic, oral, and plastic surgery, as well as physical and occupational therapists and other rehabilitative services. When the war ended, the Army had 92 large hospitals in the United States, with a combined capacity of over 120,000 beds. The sick and wounded were moved through the system on hospital trains. In addition to psychiatric programs, considerable emphasis was placed on physical reconstruction and the rehabilitation of wounded soldiers prior to discharge.

Both World Wars had one thing in common. The conflicts started years before the entry of the United States, giving the Medical Department time to prepare. In 1939, when war began in Europe, the Army Medical Department was geared to serve a garrison army. The almost 13,000 officers and men of the Medical Department operated seven general and 119 station hospitals in the United States, Hawaii, the Philippines, and the Panama Canal Zone. By June 1940, six months before the United States entered the war, the Medical Department employed 18,000 people. Six months after Pearl Harbor, the Medical Department numbered 118,000. By the end of the war, the Medical Department employed about 664,000 officers and soldiers. Importantly, the Medical Department now included more than just physicians and nurses: Dietitians, physical therapists, pharmacists, and even medical administrators were now permanent fixtures.

World War II was very different from previous wars. This was truly a world war. It was fought around the globe in “theaters of operation” with commands that largely controlled their own assets, including medical units. In Washington, the Department of War reorganization of March 1942 changed historic reporting relationships, and only decisions about the professional standards of care would remain in the purview of the Surgeon General; operational control of medical units was left to the theater commanders and their chief medical officers.

One reason for the low mortality rate during World War II was the rapidity with which seriously wounded soldiers could travel through the five echelons of evacuation to receive the specialized care they needed. The speed actually increased as the war went on and stood in sharp contrast to what had been possible only 25 years earlier in World War I. Medical evacuations by air, which had averaged only 272 per month in 1943, hit a peak in July 1945, with 12,326 patients debarking from aircraft. The increased role aircraft were playing in these evacuations by war’s end foretold the revolution in military medical care that was to take place in the latter half of the 20th century.

Medical care for those wounded in combat centered on general, specialized general, and convalescent hospitals. By the fall of 1943, convalescent patients accounted for approximately 75 percent of the patient load of general hospitals. Unfortunately,



convalescent centers often lacked the essential personnel and facilities that were considered essential for rehabilitation programs.

One reason convalescent centers were considered necessary was the inability of the VA to care for returning veterans. The situation was so critical that, on December 4, 1944, President Roosevelt ordered the Secretary of War *not* to discharge overseas casualties from the service until they had received “the maximum benefits of hospitalization and convalescent facilities,” including “physical and psychological rehabilitation, vocational guidance, prevocational training and resocialization.” (Roosevelt, 1944). After the close of World War II, the Army Medical Department demobilized along with the rest of the Army, transferring these convalescent centers to a newly revitalized VA under the direction of Army General Omar Bradley.

## Role of the State in Caring for Veterans

The third broad theme from history is the increased involvement of states in taking care of veterans in general and of disabled veterans in particular. Prior to World War I, programs for veterans centered on pensions and “soldiers homes,” where the aged and disabled could live. After World War I, *rehabilitation* became an important third element of veteran care. This new emphasis ultimately gave rise to the VA and a vast array of programs designed to help disabled veterans become productive members of society.

### The Ancient World

In the ancient world, care for the wounded was generally a private affair, rather than a state responsibility. When a citizen soldier was wounded, his care usually fell to his family and friends. After the war, the citizen-soldiers, now veterans, returned to their families and their farms. They had fulfilled their obligations as citizens, earned the adulation of their neighbors, and sometimes gained a portion of the spoils. The city-states of classical Greece, however, are noteworthy because they were the first governments to take *some* responsibility for wounded soldiers, widows, and orphans. As early as 594 B.C. in Athens, a maimed soldier was to be “maintained at the public charge” (as quoted in Snyder, Gawdiak, and Worden, 1991, p. 2). A generation later, in his famous funeral eulogy, Pericles pledged public support for the children of those killed in battle. The phrase “to the victors belong the spoils” had particular meaning in ancient times because plunder was shared among the victorious troops, providing wealth in lieu of salaries or pensions. In the conquering armies of Alexander the Great (356–323 B.C.), which fought far from home, soldiers unfit for further service were usually discharged in place and granted land, becoming “colonists” who would thus help Hellenize the conquered territories.

The picture we have of the Roman Army comes into focus after the civil wars and with the founding of the Empire by Augustus in 27 B.C. For the first time, soldiers



paid military allegiance ultimately to the Emperor, not to the commanders of their legions. In turn, Augustus regulated everything, from their pay, the period of their enlistment, and the money and benefits they would receive when they retired, generally at 25 years of service. Soldiers who served to retirement were granted citizenship, if they were not already citizens; allotments of land; a substantial payment equal to 14 times their annual salaries; and exemption from taxes and certain duties other citizens were required to carry out. By one account, half of those recruited into service lived through to retirement.

There were also provisions for those disabled from wounds or disease. If the disabled had served for at least 20 years, he received the same as any other honorably discharged soldier. For lesser periods of service, he received a reduced pension based upon his years of service.

For the Romans, the issues of widows and children were less straightforward. The ordinary soldier was not allowed to marry, a policy many armies, including our own, continued until recent times. As a result, Roman soldiers joined burial societies, which paid out substantial sums on the retirement or death of a member. Payments were also made if a soldier left service because of wounds or illness. It should be noted that this notion that soldiers should give up part of their pay for the promise of future care is repeated throughout history. It lies behind today's Servicemembers' Group Life Insurance program, the Chatham Chest of the British Navy of the 17th century, and the deductions made from the pay of American sailors for the upkeep of the Navy Home in Biloxi, Mississippi.

### **After Rome**

We have little to learn from the way soldiers and veterans were treated in Europe during the Middle Ages, except perhaps that advances in care and enlightened treatment could be transitory. In the early Middle Ages, it fell to the feudal lord to care for the knights in his service or to the monasteries to care for ordinary soldiers. Disabled and chronically ill veterans were either taken care of by family or friends or treated like any other indigent poor person, with no special consideration for how the disability came about or for the years of loyal service. Only gradually, with the rise of the nation-state, would this change.

The move to the nation-state reduced the reliance on mercenaries, whose loyalty went to the highest bidder, in favor of the citizen soldier, whose loyalty was to the sovereign. To encourage voluntary enlistments, the monarchs of the day had to improve the living conditions of their soldiers and provide both medical care and veterans' programs. While medical care for the sick and wounded soldier could be justified on the grounds that it returned a soldier to the fight, care for a veteran was more problematic. Monarchs often resented that they had to spend money on people who no longer were of value to them. Some saw a cheap way out by directing others to provide for veterans in their stead. A common way was to direct the Church to take on this responsibility

and, during Louis IX's reign in France, each monastery was given a quota. In a supreme act of audacity, the king required monasteries that could not take care of their quotas to provide their charges with cash pensions, so that they might take care of themselves. Not only did the Church object, this system did not serve the veterans well. Few took to the monastic life, and what money they received went quickly, with the result that former soldiers often became beggars. Accordingly, French monarchs were increasingly forced to take on the responsibility for their disabled and elderly veterans.

Soldier's homes began to emerge in the late 1500s. Henry IV (1589–1610) established a royal home for destitute and disabled soldiers, later extended to the widows and orphans of soldiers killed in battle. Cardinal Richelieu, during the reign of Louis XIII (1610–1643), started work on a home for old and disabled soldiers. The work was continued under Louis XIV, and l'Hôtel des Invalides, a hospital for aged and disabled soldiers, opened in 1670. For its upkeep, the government provided funds equal to a fixed proportion of the total military budget. However, this was never adequate; built for 4,000 pensioners, more than 15,000 applied for residency between 1676 and 1704.

Louis XV found the large numbers of crippled veterans still begging on the streets of Paris repugnant. His remedy was to issue an edict making begging a crime under penalty of death. Eventually, he introduced a pension system for disabled soldiers and assigned the less disabled to garrisons in frontier towns, the *compagnies détachées d'invalides*. By 1763, there were 150 such units, with 15,000 troops. A census taken at the time of the French Revolution found 3,000 men actually living in Les Invalides in Paris, with approximately 26,000 pensioned soldiers living outside the capital.

Britain, insulated by the English Channel, never had a large standing army; however, after the Thirty Years War with Spain, as many as 80,000 returning soldiers faced severe problems reintegrating into civilian life. In earlier times, the Church would have taken up their plight, but the church-based system of local care was disbanded when Henry VIII brought the Protestant Reformation to England. For his daughter, Queen Elizabeth I, these returning veterans, with their war-honed skills in arms, posed a threat that could not be ignored.

For Queen Elizabeth, spending money on veterans was particularly vexing, and she tried to pass the responsibilities on to local counties by act of the Privy Council. When this did not work she got Parliament to act, setting off a struggle between a miserly national government and reluctant local governments the echoes of which can still be heard. The Act for the Relief of Souldiours of 1593 provided both a rationale for pensions, *compassion* and *practicality*, and a mechanism for providing state support for a decentralized system of local care. While the national law specified that disabled veterans were entitled to life pensions and even gave the local authorities specific authority to raise taxes *on themselves* to pay for the pensions, local authorities chose to grant pensions only to those they determined were unable to work and were otherwise destitute. Eventually, in 1647, Parliament gave in and took over the responsibility for

pensions but, realizing their cost, made inability to work the only basis for determining whether someone was eligible for a disability pension.

Disabled seamen were treated separately from disabled soldiers. England was a seafaring nation, and the problem of disabled seamen was less episodic and long term. In 1590, at the request of sailors, a mutual fund was established, and held in a box at Chatham, and the fund itself became known as the Chatham Chest. The fund was originally financed by members' contributions, which were deducted from their pay, along with funds later provided by the government. Pensions were granted on a fixed scale, with different rates, say, for the loss of a limb or for the loss of both arms.

During the English Civil Wars (1642–1651) and immediately after, Parliament again attempted to push the burden of issuing pensions to local communities with no better success. Eventually, royal hospitals were established that were modeled after the French *Les Invalides*, but like the Chatham Chest, they were financed by deductions from the pay of soldiers and sailors. The rise of the royal hospitals was the final nationalization of the care of disabled veterans. It put an end to the county scheme, but not necessarily to the benefit of the disabled. Rather than being maintained by tax revenues, the hospitals were royal charities paid for principally by deductions from soldiers' and sailors' own pay, and later assigned a proportion of the "spoils of war" and fines levied on the soldiers for minor infractions of the rules; levied fines are also used today to support the Armed Forces Retirement Home in the United States.

In Britain, care for veterans, war widows, and orphans has always been problematic. For the wealthy and privileged of the officer class, little was required. For the common soldier, whom the Duke of Wellington once described as "the scum of the earth" (Coss, 2010, p. 29), little was given. It eventually fell to concerned citizens to augment the funds the government provided veterans. As distinct from the purely religious hospices run by the charitable orders of the past, these civilian organizations were essentially secular, even as they often saw their mission as part of a "Christian duty" to care for the ill and disabled. The appeal for private funds was so pervasive that Parliament established the Royal Patriotic Fund Corporation to coordinate and oversee such private contributions. After the Boer War, the Soldiers and Sailors Help Society even established workshops to teach useful trades to men discharged as medically unfit and disabled. These, together with similar programs established in France and Belgium, were the forerunners of the government programs established after World War I.

### **In America**

While the American system of care was originally based on the British model, it stands in sharp contrast in how it has treated veterans in general and the disabled, widows, and orphans in particular. Where Britain was niggardly, America was generous, even from its earliest days. The English law of 1593, the *Acte for the Relief of Souldiours*, set the standard for the American colonies but was implemented more generously. In 1636, the Plymouth Colony (Massachusetts) was the first to provide care for those who

survived battle wounds, and soldiers sent outside the colony if “maimed or hurt” were maintained completely by the colony during their lives. By the time the Declaration of Independence was signed in 1776, 11 of the 13 colonies had made arrangements for the maintenance of “hurt or maimed” soldiers.

Initially, the Continental Congress left the issue of disability pensions in the hands of the individual colonies—providing a national standard for the states to follow that promised half pay for life for a disabled officer, soldier, or sailor and with proportional relief for those only partially disabled. Congress also provided that pensioned officers, soldiers, and sailors capable of limited duty were to be formed into a *Corps of Invalids* to provide limited service. The same year, Congress resurrected a practice dating to the Romans: To encourage men to join and stay in the Army, Congress authorized grants of land for those who served for the duration of the war. The grants ranged from 100 acres of land for enlisted men to 1,100 acres for a major general.

Congress next turned to the issue of nondisability or service pensions. After much debate and at the insistence of General Washington, Congress voted half pay for life, or five years at full pay, for officers and one year’s pay as a discharge bonus for rank-and-file soldiers. The government, under the Articles of Confederation, failed to provide for payment of this obligation, and many veterans, thinking them worthless, sold them for pennies on the dollar, only to see speculators get rich when the new government of President Washington, under the Constitution, agreed to pay them in full. Finally, in 1828, Congress redressed the grievances of the surviving 850 Revolutionary War officers and soldiers with a grant of full pay for life.

In 1780, Congress also partially addressed the needs of widows and orphans. It provided for delivery of half pay to the widows and orphans of officers for seven years. No provision was made for the widows and orphans of the other ranks until 1836. When the Continental Army was disbanded on November 3, 1783, Congress established a schedule of disability pensions to be administered by the states. The standard for total disability was half pay for officers and \$5 per month for enlisted men, with partial payments for a partial disability. In 1790, with an uneven and inconsistent record of state payment, Congress took over payment of invalid pensions. In 1792, the rolls listed 1,500 invalid pensioners. What followed was a long series of Revolutionary War pension laws, which became more and more generous over time.

Following the European model, disabled veterans were generally helped through cash payments, with hospitals and domiciles being established for acute medical care and for indigent veterans. In 1798, following the British tradition of the Chatham Chest, Congress provided for the relief of sick and disabled merchant seamen by imposing a special tax on any American ship coming from a foreign port and garnishing a portion of each seaman’s wages. The following year, Congress authorized the U.S. Navy Asylum, later renamed the U.S. Naval Home, for “disabled and decrepit navy officers, seamen, and marines” (as cited in McCarl, 1925, p. 1006) to be paid for by the same 20 cents a month garnishment imposed on merchant seamen the year before.

A similar institution for the Army opened in 1851; it continues today as the U.S. Soldiers Home. In 1855, St. Elizabeth's Hospital in Washington, D.C., opened for the treatment of the mentally ill of the Army and Navy. For those who had fought for the Union, the Civil War saw a continuation of the American pattern of providing substantial care for the disabled and generous financial benefits for nondisabled veterans.

The General Law of 1862 applied to all those who served the Union in the Army or Navy, including regulars, volunteers, militia, and Marines, and without further acts of Congress, all future wars. It authorized compensation for disabilities incurred as a direct consequence of performing military service and for subsequent deaths from injuries received or disease contracted as a *direct consequence of the performance of a soldier's military duty*. The law was particularly generous when it came to widows, orphans, and other dependents and later expanded to include surviving mothers, sisters, fathers, and brothers. They were to receive pensions equivalent to the rate the deceased family member would have received for a total disability. The law also established a medical screening system for rating disabilities and, with subsequent amendments, increased the level of compensation for specific disabilities, such as loss of limbs or eyesight or deafness. The law was later amended to address the issue of caregivers. After 1866, the law provided for additional payments to be given to the disabled who required regular or even partial "aid and attendance" in an amount greater than the payments for a "total disability in both feet" or "the incapacity to perform manual labor."

For the 20,000 amputees who survived the war, the pensions were not adequate to cover the cost of artificial limbs, and the economic situation of the wounded even weighed on surgeons' decisions about which type of amputation to perform. In 1862, Congress addressed this by authorizing the Army Medical Department to issue artificial limbs. By the end of 1867, over 6,000 artificial limbs had been issued, and a program was started to replace them every five years. This program was the first large-scale attempt of any government to systematically address the issue of rehabilitation, soon to be one of the major pillars of a modern program for the care of veterans.

In his Second Inaugural Address, President Lincoln promised, "to care for him who shall have borne the battle and for his widow and his orphan." As the war was drawing to a close, Congress chartered the national homes to provide long-term care for veterans of the Union Army, splitting the costs with the states that had not seceded in 1861. The states set up their own homes, and by 1865, over 9,000 veterans were receiving care in 33 state homes in 28 states. Twenty states provided "haven for veterans' wives, widows and mothers."

After the war, such organized Union veterans groups as the GAR pressured the Republican-controlled Congress to vote increasingly generous pensions, which soon became the largest cost item in the federal budget. In 1864, 1866, and 1873, Congress increased the maximum compensation and expanded pensions for those who had contracted diseases during their service. By 1888, 64 percent of all pensions were for diseases and other nonbattlefield injuries, rather than from battle wounds. The Arrears

Act of 1879 allowed soldiers with newly discovered war-related disabilities to receive a single payment equal to all the pension payments they would have received if they had made the claim at the time of the war. Finally, the Dependent and Disability Pension Act of 1890 provided that veterans incapable of *manual labor* would receive a pension even if the cause were not service connected.

The Civil War pension became an “old-age and survivors’ benefit program” almost 50 years before the enactment of Social Security. Death benefits under the 1890 act were paid to the current widows and children without regard to the cause of the veteran’s death or his marital status at the time of his service. In 1893, 41.5 percent of the federal budget went toward Civil War pensions. By 1906, simply reaching the age of 62 was enough for the pension to start. In 1914, of the nearly 500,000 Civil War pensioners, only 12 percent were disabled.

The Civil War pension was, however, one that not all Americans shared equally. Those of the old South who had fought against the Union received nothing, even though they paid taxes to the federal government, in the form of high tariffs designed to protect business in the northern states, the businesses of their old enemies. The care of disabled veterans who had fought against the Union was left solely to their states of the Old Confederacy, and payments were only a fraction of what a similarly wounded Union veteran received.

At the beginning of World War I, and following the Civil War model, everyone thought of *disabled* in terms of amputations and blindness, and care for the disabled meant a pension and, possibly, a place in a soldiers’ home. Soon, in keeping with other Progressive Era reforms, there was a new commitment—not only to heal the wounded but also to return the disabled to productive lives, a commitment that continues to this day.

The three organizations responsible for caring for the disabled veterans of World War I were the Bureau of War Risk Insurance, which provided the funds; the Federal Board for Vocational Education, which provided vocational reeducation; and the USPHS, which provided health care. The triad of agencies proved unwieldy. Eventually, Congress created the Veterans’ Bureau, as an independent agency reporting directly to the President, to take over the veterans programs from the three agencies.

In 1924, the hospitals of the Veterans’ Bureau had almost 10,000 vacant beds, and Congress expanded veterans’ access to health care by opening the system to “veterans of all wars needing . . . care” regardless of service connection. As time went on, service-connected admissions dropped, but non-service-connected admissions grew steadily, accounting for 92 percent of all admissions in 1940.

In 1930, as the country moved into the Great Depression, the Veterans’ Bureau joined with the National Homes for Disabled Volunteer Soldiers and the Bureau of Pensions to form the VA. In 1933, the Roosevelt administration severely cut back on veterans’ programs. In a move reminiscent of the Elizabethan Privy Council of 1593, President Roosevelt took the radical position that state and local governments should



have primary responsibility for the care of veterans whose disabilities are not connected to their military service. In 1934, Congress overrode the President's veto and restored almost all the benefits curtailed the previous year, including access to VA facilities for veterans whose needs and disabilities were not connected to their military service.

During the 1930s, Congress authorized the VA to acquire only enough hospital beds to meet the needs of neuropsychiatric and tuberculosis patients; veterans with other non-service-connected disabilities were to be served on a space-available basis. Between 1931 and 1941, however, the number of VA hospitals increased by half, and bed capacity doubled. Unfortunately, with the shift in the kinds of care the VA provided, the institution began to appear to be a warehouse for the mentally ill and indigent and as a backwater of the medical profession. It was this system that faced the influx of millions of World War II veterans.

Before the war, the physical rehabilitation of those injured or disabled would be the province of the VA, not the Army or Navy. However, once war came, a shortage of critical personnel and a lack of facilities severely limited the VA's ability to receive patients. In fact, the VA played a relatively minor role in the care of American service members discharged during World War II, continuing to serve mainly its prewar constituency.

During the early years of the war (1942–1943), less than 10 percent of VA hospital admissions were discharged soldiers. On June 30, 1945, there were 21,000 World War II veterans in VA hospitals, compared with 58,000 in Army convalescent hospitals and 153,000 in Army general hospitals. After the war, many Army facilities were transferred to the VA, but some disabled service members were kept on active duty to receive additional rehabilitation services, rather than being transferred to the VA.

Programs for World War II veterans came in two stages. The first, the Disabled Veterans' Rehabilitation Act of 1943 provided for indigent care on a space-available basis and authorized vocational training for the disabled. The second, best known as the GI Bill, was signed into law in 1944, providing for college or vocational education for returning veterans, as well as various loan programs for purchasing homes or starting small businesses for all veterans, even those without disabilities.

In the months immediately following the end of the war, the VA underwent nothing short of a revolution. The task of building a modern VA fell to LTG Omar N. Bradley. Bradley made major changes, including decentralizing VA decisionmaking, creating a professional medical corps independent of Civil Service regulations, and hiring thousands of new physicians. He established VA hospital affiliations with medical schools, organized physician-training programs at VA hospitals, established prestigious advisory boards, and put a new emphasis on rehabilitation. The increase in the government's role in caring for veterans of World War II can be seen in the increase in the employment at the VA from 65,000 in 1945 to a peak of 200,000 in 1948 and in the 13-fold increase in its budget.



## Recent Awareness of Psychological and Cognitive Injuries: The Invisible Wounds That Transcend the Immediate Battle

The fourth broad theme from history is the relatively recent awareness of the psychological and cognitive consequences of war. While some have claimed that psychiatric impairment, such as PTSD, is a result of modern warfare, a strong case can be made that such conditions have been with us all along. Jonathan Shay, for example, examined the Homeric tales and found accounts of both physical and psychological combat wounds. Nevertheless, it was not until the Civil War that psychiatric casualties were even recognized and not until World War I that treatments were developed.

During the Civil War, neuropsychiatric casualties were reported after major battles. By one account, after the battle of Antietam, upwards of one-third of the Confederate Army of Northern Virginia was classified as “sulkers” or “stragglers.” Many seemed to get better with rest, and those seriously impaired were simply dismissed and left to find their own way. World War I was the first war in which neuropsychiatric casualties became significant. The term *shell shock* is most readily associated with World War I, but it was a term that the man who coined it soon wished would go away. The original assumption was that being too close to an exploding shell caused dysfunctional behaviors. But a soldier displaying neuropsychiatric symptoms yet showing no physical signs could be accused of cowardice and sentenced to death as a warning to other “malingerers.” (During the war, 17 British soldiers were executed for cowardice.) It soon became clear that immediate proximity to an exploding shell was not necessarily the only reason for soldiers to display neuropsychiatric symptoms. Rather, these symptoms were a psychological or emotional response to the strains of terrifying and overwhelming battle experiences. Nevertheless, a sharp divide remained between those who believed that war neurosis was a physical condition and those who believed that the primary cause was emotional.

The significance of psychiatry in general during World War I cannot be overstressed. The Army’s official history notes:

Whereas mental illness had been almost wholly ignored and the medical advances before the war dealt almost exclusively with physical diseases, the wide prevalence of neuroses among soldiers was apparently leading to a revision of the medical and popular attitude toward mental and functional nervous diseases, and stimulating widespread interest in their observation and study. (Bailey, Williams, and Komora, 1929, p. 8)

At the start of World War II, the Army was convinced that it could effectively screen out those predisposed to neuropsychiatric problems before they joined. While more than 1.25 million men were rejected because of perceived mental and emotional abnormalities—the largest single cause for rejection at 12 percent of all those

examined—screening did not achieve its goal. The number of neuropsychiatric disorders during the war was to be two to three times higher than during World War I.

Because the Army relied solely on screening, it was unprepared to deal with the neuropsychiatric casualties that overseas deployments and combat brought. In the field, the goal was to return a soldier to his unit as quickly as possible. While the exact number of neuropsychiatric cases will never be known, the best estimate is that the number far exceeded admissions for battle wounds. Between January 1943 and December 1945, 18.8 percent of all soldiers returning to the United States were neuropsychiatric patients—a number equivalent to 12 combat divisions. Army policy emphasized discharging these soldiers rather than treating them, until treatment was authorized in March 1945. Once treatment was authorized, such “shortcut” treatments as therapeutic hypnosis and drugs, along with group therapy, were often pursued because of the shortage of mental health professionals.

After the war, the services and the VA undertook a large study of former soldiers admitted for neuropsychiatric disorders. The follow-up clinical examination of the men who were “definitely ill at separation” showed that only 36 percent had actually sought treatment, and there was “no evidence that treatment played an important role in the general improvement which occurred between separation and follow-up” (Brill and Beebe, 1955, p. 135). It should also be noted that, while the VA treated only a small number of the subjects of the study or the total number receiving payments for neuropsychiatric disabilities, it had all that it could handle treating those who did seek help. After the war, 30 percent of all disability awards were for neuropsychiatric problems, and psychotic and other neuropsychiatric patients occupied more than half of the beds at VA hospitals. On the eve of the Korean War, care for the neuropsychiatric casualties of World War II remained problematic.

## Themes

This chapter has described the broad themes evident throughout history that influenced the care provided to the casualties of our nation’s wars. Although these major developments are described as four discrete areas, in fact they are interrelated. Advances in one complement the other and sometimes counter changes in a third. For example, advances in medical science were matched with improvements in how the wounded were cared for on the battlefield at a time when technology was working to increase the lethality of new systems. This occurred when gunpowder was introduced and again during World War I. The overall reduction of battlefield mortality during World War II suggests that advances in medicine and medical support won out, at least temporarily, over the increased lethality of new technologies of the mid-20th century. The demons of war, however, may yet have the last say as the number of neuropsychiatric casualties increases in current wars and as our ability to provide care lags.

If the themes outlined here are at all universal and enduring, they should be relevant in the military conflicts after World War II in the late 20th and early 21st centuries and, their influence on policies regarding wounded warriors in recent years should be evident.



## **Military Personnel and Casualties from Principal U.S. Wars**

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This appendix presents data taken from the Defense Casualty Analysis System (Table A.1). The original file has been reformatted for this book, but the contents have not been edited.

**Table A.1**  
**Principal Wars in Which the United States Participated: U.S. Military Personnel**  
**Serving and Casualties**

War/Conflict	Branch of Service	Number Serving	Casualties			
			Total Deaths	Battle Deaths	Other Deaths	Wounds Not Mortal <sup>a</sup>
Revolutionary War 1775–1783	Total	— <sup>b</sup>	4,435	4,435	—	6,188
	Army	—	4,044	4,044	—	6,004
	Navy	—	342	342	—	114
	Marines	—	49	49	—	70
War of 1812 1812–1815	Total	286,730 <sup>c</sup>	2,260	2,260	—	4,505
	Army	—	1,950	1,950	—	4,000
	Navy	—	265	265	—	439
	Marines	—	45	45	—	66
Mexican War 1846–1848	Total	78,718 <sup>c</sup>	13,283	1,733	11,550	4,152
	Army	—	13,271	1,721	11,550	4,102
	Navy	—	1	1	—	3
	Marines	—	11	11	—	47
Civil War (Union forces only) <sup>d</sup> 1861–1865	Total	2,213,363	364,511	140,414	224,097	281,881
	Army	2,128,948 <sup>c</sup>	359,528	138,154	221,374	280,040
	Navy	84,415	4,523	2,112	2,411	1,710
	Marines	— <sup>e</sup>	460	148	312	131
Spanish-American War	Total	306,760	2,446	385	2,061	1,662
	Army <sup>f</sup>	280,564	2,430	369	2,061	1,594
	Navy	22,875	10	10	—	47
	Marines	3,321	6	6	—	21
World War I 1917–1918	Total	4,734,991	116,516	53,402	63,114	204,002
	Army <sup>g</sup>	4,057,101	106,378	50,510	55,868	193,663
	Navy	599,051	7,287	431	6,856	819
	Marines	78,839	2,851	2,461	390	9,520
World War II 1941–1946 <sup>h</sup>	Total	16,112,566	405,399	291,557	113,842	670,846
	Army <sup>i</sup>	11,260,000	318,274	234,874	83,400	565,861
	Navy <sup>j</sup>	4,183,466	62,614	36,950	25,664	37,778
	Marines	669,100	24,511	19,733	4,778	67,207
Korean War 1950–1953 <sup>k</sup>	Total	5,720,000	36,574	33,739	2,835	103,284
	Army	2,834,000	29,856	27,731	2,125	77,596
	Navy	1,177,000	657	503	154	1,576
	Marines	424,000	4,509	4,267	242	23,744
	Air Force	1,285,000	1,552	1,238	314	368

Table A.1—Continued

War/Conflict	Branch of Service	Number Serving	Casualties			
			Total Deaths	Battle Deaths	Other Deaths	Wounds Not Mortal <sup>a</sup>
Vietnam Conflict 1964–1973 <sup>l</sup>	Total	8,744,000	58,220	47,434	10,786	Hosp. care req'd.: 153,303 No hospital care: 150,341
	Army	4,368,000	38,224	30,963	7,261	Hosp. care req'd.: 96,802 No hospital care: 104,723
	Navy	1,842,000	2,566	1,631	935	Hosp. care req'd.: 4,178 No hospital care: 5,898
	Marines	794,000	14,844	13,095	1,749	Hosp. care req'd.: 51,392 No hospital care: 37,202
	Air Force	1,740,000	2,586	1,745	841	Hosp. care req'd.: 931 No hospital care: 2,518
Persian Gulf War 1990–1991 <sup>m</sup>	Total	2,225,000	383	148	235	467
	Army	782,000	224	98	126	354
	Navy	669,000	56	6	50	12
	Marines	213,000	68	24	44	92
	Air Force	561,000	35	20	15	9

SOURCE: Defense Casualty Analysis System, "Principal Wars in Which the United States Participated—U.S. Personnel Serving and Casualties," Web page, Washington, D.C.: U.S. Department of Defense, 1775–1991.

NOTE: Data prior to World War I are based on incomplete records in many cases. Casualty data are confined to dead and wounded and, therefore, exclude personnel captured or missing in action who were subsequently returned to military control.

<sup>a</sup> Marine Corps data for World War II, the Spanish-American War, and prior wars represent the number of individuals wounded, whereas all other data in this column represent the total number (incidence) of wounds.

<sup>b</sup> Not known, but estimates range from 184,000 to 250,000.

<sup>c</sup> As reported by the Commissioner of Pensions in the annual report for fiscal year 1903.



**Table A.1—Continued**

<sup>d</sup> Authoritative statistics for the Confederate forces are not available. Estimates of the number who served range from 600,000 to 1,500,000. The final report of the Provost Marshal General, 1863–1866, indicated 133,821 Confederate deaths (74,524 battle and 59,297 other) based upon incomplete returns. In addition, an estimated 26,000 to 31,000 Confederate personnel died in Union prisons.

<sup>e</sup> The Marine Corps number serving is included in the Navy total.

<sup>f</sup> Number serving covers the period April 21 to August 13, 1898, while dead and wounded data are for the period May 1 to August 31, 1898. Active hostilities ceased on August 13, 1898, but ratifications of the Treaty of Peace were not exchanged between the United States and Spain until April 11, 1899.

<sup>g</sup> Includes air service. Battle deaths and wounds not mortal include casualties suffered by American forces in northern Russia to August 25, 1919, and in Siberia to April 1, 1920. Other deaths cover the period April 1, 1917, to December 31, 1918.

<sup>h</sup> Data are for the period December 1, 1941, through December 31, 1946, when hostilities were officially terminated by Presidential Proclamation, but a few battle deaths or wounds not mortal were incurred after the Japanese acceptance of the Allied peace terms on August 14, 1945. Number serving from December 1, 1941, through August 31, 1945, were: Total—14,903,213; Army—10,420,000; Navy—3,883,520; and Marine Corps—599,693.

<sup>i</sup> Includes Army air forces.

<sup>j</sup> Battle deaths and wounds not mortal include casualties incurred in October 1941 due to hostile action.

<sup>k</sup> Worldwide military deaths during the Korean War totaled 54,246. In-theater casualty records are updated annually.

<sup>l</sup> Number serving covers the period August 5, 1964 (“Vietnam era” begins) through January 27, 1973 (date of cease fire). Deaths include the period November 1, 1955 (commencement date for the Military Assistance Advisory Group) through May 15, 1975 (date last American servicemember left Southeast Asia). Casualty records are updated annually, including current deaths that are directly attributed to combat in the Vietnam Conflict. Additional detail now on the table shows number of wounded in action service members not requiring hospital care.

<sup>m</sup> Coast Guard numbers are included with the Navy. The report does not include one prisoner of war (Speicher). Casualty records are updated annually.

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**Ronald R. Blanck**

Former Surgeon General of the Army

*So often it's remarked that we fail to learn from history—but too frequently there's no good history book from which to learn. One of the several issues where that challenge arises is how we treat those who fall in battle. Bernard Rostker corrects this with his *Providing for the Casualties of War*. It reminds us that there are few truly new problems—and it instructs us on the successes and failures of the solutions tried before. I would have valued being able to turn to it in the days after 9/11, and I am confident that all those now responsible for these matters will want to read it carefully. Rostker has performed a true public service.*

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**Michael B. Katz**

Walter H. Annenberg Professor of History  
University of Pennsylvania



**ABOUT THE AUTHOR**

Bernard Rostker is a senior fellow at the RAND Corporation, where he has served as Associate Director of the RAND Arroyo Center and Director of the Defense Manpower Research Center in RAND's National Defense Research Institute. He was formerly Under Secretary of Defense for Personnel and Readiness, the Secretary of Defense's senior policy advisor on recruitment, career development, pay, and benefits for 1.4 million active duty military personnel, 1.3 million Guard and Reserve personnel, and 725,000 DoD civilians. He also had oversight responsibilities for the DoD health delivery system. Prior to that, he

served as Under Secretary of the Army, Assistant Secretary of the Navy for Manpower and Reserve Affairs, and Director of Selective Service, where he formulated the Selective Service Revitalization Plan. Under his leadership, the first mass selective service registration since World War II was executed, and almost four million young men registered. Over his career, Dr. Rostker has been nominated by the President and confirmed by the Senate four times and received a number of awards, including the Distinguished Service Medal from the Selective Service, the Department of the Navy, the Department of the Army, and the Department of Defense. Dr. Rostker is a Fellow of the National Academy of Public Administration. He is the author of *I Want You! The Evolution of the All-Volunteer Force*.



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